A CRITICAL EXPLORATION OF THE EXPERIENCES OF DOGS IN SOCIAL WORK

WHO'S A GOOD DOG?
A CRITICAL EXPLORATION OF THE EXPERIENCES OF DOGS IN SOCIAL WORK

BY EMMY NORDSTROM HIGDON, BSW, MSW

A Thesis Submitted to the School of Graduate Studies in Partial Fulfilment of the Requirements for the Degree Doctor of Philosophy

McMaster University Doctor of Philosophy (2021) Hamilton, Ontario (Social Work)

TITLE: Who's A Good Dog? A Critical Exploration of the Experiences of Dogs in Social Work
AUTHOR: Emmy Nordstrom Higdon (McMaster University)
SUPERVISOR: Dr. Bonnie Freeman
NUMBER OF PAGES:

Lay Abstract

This dissertation uses a mixed-methods approach to explore the experiences of dogs involved in social work practice. The research addresses four questions: (1), How can the experiences of dogs in social work be documented? (2), Why is it important to document these experiences? (3), How are dogs experiencing their involvement in social work practice? (4), What knowledge do the social workers who work with dogs have about involving these animals in social work? Based on the findings, it can be determined that partial experiences of dogs involved in social work practice can and should be documented and explored to understandthe responsibility, professionalism, and expectations that working dogs are subject to.

Abstract

Animals and social work is an emerging field, and there is a troubling lack of research that has been conducted that attempts to document or explore the experiences of the animals involved in these practices. This dissertation explores the experiences of dogs working alongside social workers, using a mixed methods approach focussing on qualitative data. Data was gathered using critical ethnographic methodology involving interviews with social workers, dog owners and service users. Extensive observational field notes were taken during the use of an emerging research-creation digital method with the dogs and sensor data technologies. This research addresses three questions: (1), How can the experiences of dogs in social work be documented? (2), Why is it important to document these experiences? (3), How are dogs experiencing their involvement in social work practice? (4), What knowledge do the social workers who work with dogs have about involving these animals in social work? The data in this study isanalyzed through a critical post-humanist lens informed by decolonial Indigenous knowledges. Important themes that emerged were interspecies relationships, dog personalities and behaviourswhile working, workplaces and responsibilities, needs and benefits, training, and use of technology in research with OTH animals. Based on the innovative findings of this study, it can be determined that partial experiences of OTH animals involved in social work practice can and should be documented and explored to understand the high levels of responsibility, professionalism, and expectations that working dogs in the field are subject to.

Key words: social work, animals, critical animal studies, animal-assisted interventions, dogs, therapy dogs, decolonization, posthumanism

Acknowledgements

This dissertation was completed on unceded Indigenous land, and I would first like to offer my acknowledgement and gratitude to the original keepers of those territories.

I would like to offer my deep thanks and gratitude to the scholars and members of the academic community who inspired and supported me through this work: Dr. Bonnie Freeman, Dr. Lauren Corman, Dr. James Gilett; Dr. Andrea Zeffiro, John Fink, Dr. Dale Askey, and the Sherman Centre for Digital Scholarship; Dr. Lori Ross and the Re:Searching for LGBTQ2S+ Health team; Dr. Chris Sinding, Darlene Savoy, and the School of Social Work at McMaster; Dr. Cassandra Hanrahan, Melissa Laing, Dr. Tina Wilson, Dr. Jake Pyne, Dr. Samantha Wehbi, Dr. Jeff Karabanow; finally, Dr. Allan Irving, Dr. Stanley Witkin, and the Global Partnership for Transformative Social Work (the Vermont Group). I would like to thank those Indigenous writers who share their knowledges and and allowed me to learn from them: Alicia Elliott, Dr. Billy-Ray Belcourt, and Joshua Whitehead, among others. I would also like to acknowledge my provincial and federal funders, who made this study possible through OGS and SSHRC grants.

I am forever indebted to the other-than-human animals in my life. This dissertation is, as ever, dedicated to D (Dinner Date), who inspired this work, and sadly passed during its completion. I am grateful to continue to share my life with those who were also her companions: Boom, Whisper, Willow, and Pavot. Atlas and Thor are also mentioned in this work and remembered fondly. Other animals who touched my life during the completion of this work include Jewl, Yoda, Jack, Bailey, Kiba, Spooky, Odin, Stella, Khatooshka, DieselCat, Mushroom, Tuco, George, Mason, Baba, PB, Moonstone, Otto, and Dusty.

A number of generous people supported me financially to undertake my final term of study for this program when other funding was no longer offered. Thank you so much, J. Colin Crowley, Arley McNeney, Alex Jocic, Brenton Buchanan, Elyse Quesnel, Alex Platt, Micah Elizabeth Scott, Shawnta Dodson, Sandy Quinn, and Brenda Legge, as well as other donors who chose to remain anonymous. I quite literally could not have done this without you.

I would never have completed this program of study without the incredible support of my partner, Sen Nordstrom, and dear friends Emmy Jackson, Elyse Quesnel, Jenn Dawe, Sarah Cuddie, Alex Jocic, Cecilia Lyra, Micah Elizabeth Scott, and Kaitlin Blanchard. I am also blessed to be supported by some wonderful communities: the Festival of Literary Diversity, the Rogue Book Coven, Westwood Creative Artists, and human and non-human members of Unicamp. I am humbled by your support and offer my deepest thanks.

Table of Contents

List of Figures

Introduction

Land Acknowledgement

The land on which this study was conducted has been a site of human activity for more than 15,000 years. It is the territory of the Anishinaabe, Huron-Wendat, and the nations of the Haudenosaunee Confederacy. Before this territory was impacted by contemporary treaties, the Toronto Purchase and Treaty 13, it was the subject of the Dish With One Spoon Wampum Belt Covenant, an agreement between the Haudenosaunee Confederacy, the Ojibwe and allied nations, and colonial people to peaceably share and care for the resources around the Great Lakes.

The Two Row Wampum is a symbolic record of the first agreement between colonial and Indigenous people on this territory, which dictated that we would live on this land together and respect each other's sovereignty. The Dish with One Spoon is an agreement that recognizes that all inhabitants of the land live off of the same resources. It is difficult to share a collective meal together off of a dish with one spoon, hence protocols are put in place to ensure mutual respect and accountability to each other, and to the land. Ontario is covered by 46 treaties and other agreements.

Toronto, where I reside, is still home to Indigenous people from across Turtle Island, including Inuit and Métis peoples. Our intersecting communities are comprised of those native to this land, Indigenous people from other territories, as well as settlers who have come here by choice, force, or otherwise a result of colonialism and imperialism. The Truth and Reconciliation Commission 94 Calls to Action reaffirms that the Treaties with Indigenous Peoples must be

lawfully honoured. We are all treaty peoples and are responsible for honouring and upholding those agreements.

Indigenous peoples in Toronto and across the province of Ontario are still heavily impacted by structural oppression, and face individual discrimination, and in some cases, vegan and animal liberation activists are complicit in this violence, or may even be actively and consciously engaged in perpetrating it. Most of these communities in Ontario are led primarily by settlers. Often, we fail to recognize the common ground that we share with Indigenous communities that have defended the earth and its inhabitants against destruction and devastation through treaties like the Two Row, and also through traditional cultural practice, since long before first contact with colonizers. Settler activists in this region tend to advocate against use or slaughter of animals at any cost, and in doing so, we deny the complexity of the relationship between animals and humans, particularly those who shared this land long before we arrived. Intentionally or not, by doing so, we support the colonial agenda of Indigenous assimilation of cultures into Western society. In this study, I hope to take an intentionally decolonial approach, and recommend that this be the approach of future research in the field of animals and social work.

Introduction

Animals and social work is an emerging field, and as such, relevant literature is limited. In a national study that was conducted in the United States in 2013, it was determined that only approximately one third of social work practitioners ask questions about other than human (OTH) animals involved in service users' lives during their intake processes, despite shared knowledge among the vast majority of social workers about the links between animal and child

abuse, animal abuse and domestic violence, and the positive impacts of animal interaction on adults and children (Risley-Curtiss, Zilney, and Hornung, 2010; Risley-Curtiss, Rogge, and Kawam, 2013). Furthermore, only about one quarter of social workers in the United States involve animals as part of their intervention strategies, largely without adequate education and/or training (Risley-Curtiss, Zilney, and Hornung, 2010; Risley-Curtiss, Rogge, and Kawam, 2013). Hanrahan (2013) conducted a similar study provincially in Nova Scotia, which was repeated by Chalmers, Rohr, and Dell (2016) in the Prairie provinces of Canada. Both Canadian studies had findings consistent with the American study, which indicated a lack of awareness in social work practice about of human-animal bond and other OTH animal-related issues (Dell et al., 2011; Hanrahan, 2013; Risley-Curtiss, Rogge, and Kawam, 2013; Wolf, 2000).

One of the main contributions of this study to the field is that there is nearly a complete lack of social work literature that attempts to consider the perspectives or experiences of animals involved in social work practice. This study is novel and important in this way, and this will be explored further in the literature review chapter.

The relevant literature and research that does exist about OTH animals and social work comes from a range of disciplines and theoretical frameworks that are overwhelmingly from biomedical or clinical perspectives. They are largely comprised of quantitative empirical research, from fields such as psychology, psychiatry, or nursing (Barker et al., 2016 and 2017; Crossman, 2017; Crossman, Kazdin, and Knudson, 2015; Fine, 2010; Fine, 2011; Flynn et al., 2019; Krause-Parello and Gulick, 2015; Krause- Parello et al., 2018; Levinson, 1962; Signal et al., 2017). Much of this literature focuses on the effectiveness of animal-assisted interventions (AAI) and the role(s) of OTH animals in clinical settings (Geist, 2011; O'Callaghan & Chandler, 2011). Other articles frame AAI as a prescription, where time spent with an animal

is recommended by a doctor, similar to a medication (Altschuler, 1999; O'Haire, 2010). None of the articles cited here explore considerations about the wellbeing of the OTH animals involved in the interventions in question.

There is a body of literature that uses ecological, structural, or person-in-environment theoretical frameworks (e.g., Connell et al., 2019; Dunlop and Tsantefski, 2018; Jalongo and McDevitt, 2018; Jau and Hodgson, 2018; Lannon and Harrison, 2015; Minke, 2017;Netting, Wilson, and New, 1987; Risley-Curtiss, Holley, and Wolf, 2006; Risley-Curtiss, Holley,and Kodiene, 2011; Risley-Curtiss, Rogge, and Kawam, 2013, Mallon, 1994; Putney, 2012; Slatter, Lloyd, and King, 2012; Villalta-Gil et al., 2009; Wesley, Minatrea, and Watson, 2009; Wigget-Barnard and Steel, 2008). These articles are largely quantitative empirical research reports and focus on relationships between humans and other animals, as well as human-animal bond, in therapeutic and social environments. While many of these articles tend to focus on specific marginalized human populations (I assume that this is because so much of social work and adjacent funding is tied to grants awarded based on specific community needs), their conclusions are largely homogenous, focused on the benefits of AAI for the humans involved. A summary of the findings of the literature discussed in this section is included in the literature review chapter.

This dissertation project aims to interrogate the anthropocentric nature of society, social work, and social service provision, through identifying and beginning to address an important gap in social work research: examining the wellbeing of other than human animals involved in social work practice, by documenting how these animals are integrated into, and/or neglected by, the social work practice that they are involved in. The central aim of this project is to increase positive outcomes for animals contributing their labour to social services, and through doing

this, begin to deconstruct normalized anthropocentrism inherent in our work as social workers. This study builds on existing work introducing the field of social work to critical perspectives on OTH subjects, who have been traditionally neglected within this discipline. This will contribute to the larger project of developing a more socially and environmentally sustainable, justice-oriented social work practice.

Prior to pursuing doctoral studies, I spent more than three years as a community social worker, working directly with clients in forms of practice that sometimes involved OTH animals. An example of this work is a novel program that I began during my time as a placement student and later an employee of Phoenix Youth Programs in Halifax, NS, supporting transient and unhoused youth involved in the organization with companion animals. My activities in the program involved sharing knowledge about basic animal care, home visits to support training and/or socialization of pets, helping youth access food and medical care for their companion animals, and sometimes supporting youth in the rehoming of OTH animals that could no longer be cared for.

I have also spent the majority of my life working with OTH animals in various capacities before I entered social work research, and through these work experiences have developed expertise in human-animal relationships and OTH animal behaviour. I have shared my life and home with OTH animals since the age of seven, and it was also at this age that I was first involved in equestrianism, beginning a lifelong enthusiasm for OTH animal care and training. In addition to raising and rehabilitating my own rescued companion animals from retired racing greyhounds to formerly feral cats, in my adult life I have worked extensively with animal rescue and care organizations including Greyhound Pets of Atlantic Canada (Musquodoboit, NS), St. John Ambulance Therapy Dogs (Halifax, NS and Toronto, ON), Underdog Rescue (Toronto,

ON), the Animal Save Movement (Toronto, ON), Wishing Well Sanctuary (Bradford, ON), Peace Ranch (Caledon, ON), and Promise Ranch (Denver, CO).

I have also been employed professionally at a private dog care centre, Park9 (Toronto, ON). There, I was lucky to utilize and build on my lifetime of accumulated knowledge about dog behaviour and care, working daily with up to 75 dogs at a time in an undivided, open canine enrichment environment. I was involved in services including providing companionship, exercise, intellectual stimulation and socialization, and positive reinforcement training for the dogs and their caregivers who accessed our organization.

I do not have any credentials to substantiate my knowledge of human-animal relationships, OTH animal care, or dog behaviour specifically. However, for this study and particularly my data analysis, I drew extensively on my lifetime of accumulated knowledge, expertise, and my own relationships with OTH animals.

My interest in researching social work involving animals builds upon all these experiences, as well as work conducted during my Master of Social Work program at Ryerson University. My graduate major research project explored the experiences of social workers who focused on challenging systemic social oppression in their work with marginalized people, and who involved animals in their practice. I found that they felt their work with animals was congruent with a justice-oriented approach to social work. This made me curious to explore this area further. I published my findings from this study in the *British Journal of Social Work* (Legge, 2016).

Research Questions

This dissertation addresses four main research questions: (1), How can the experiences of dogs in social work be documented? (2), Why is it important to document these experiences? (3), How are dogs experiencing their involvement in social work practice? (4), What knowledge do the social workers who work with dogs have about involving these animals in social work? To explore these questions, I took a mixed methods approach, focusing on qualitative data collected through critical ethnographic techniques, including interviews with social workers, dog owners, and clients, in addition to observational field notes (Madison, 2012). I also collected descriptive quantitative data (Singleton and Straits, 2010) using a sensor pack that I built with emerging, accessible, non-invasive digital technologies. For this part of the study, I employed a research-creation methodology (Chapman and Sawchuk, 2012) to integrate innovative digital technologies into my data collection process. I developed this part of my study during my 2015-16 fellowship with the Sherman Centre for Digital Scholarship (SCDS) at McMaster. I used the SCDS approach to digital scholarship inorder to explore what technology could offer to my study and my field. The SCDS states that states that "digital scholarship facilitates new modes of research," and identifies sensor data as one source of evidence that can "challenge and alter the way researchers *do* research" (SCDS, 2020). This part of my study was explicitly and intentionally process-oriented, executed as a generative research-creation process.

During this process, I experimented with many different kinds of digital technologies that might be useful for the documentation of partial experiences of OTH animals in the future, including (but not limited to) 3D printing, GoPro video cameras, virtual reality gaming systems, laser cutting, woodworking, film photography and darkroom development, textile fabrication, and interactive electronic musical instruments. Through this research process, and with the support of the SCDS, I chose to focus on biometric and environmental sensors, electronics

components, computer programming, and data visualization as the digital technologies most applicable and beneficial for my current study.

Although I had no prior background in digital scholarship, computer programming, or electronics, I learned that new technologies offer possibilities for understanding animals' experiences. The technology available to consumers now is cost-effective and miniaturized in ways that it was not before, and it is non-invasive not only in physical ways, but also in that it does require video or audio recording of any time. During my fellowship with the SCDS, researched, developed, and programmed a set of electronic sensors that can be worn as part of a harness by a dog while they are working. I fabricated the harness itself, and I learned how to use pre-written open sourced code provided by the component manufacturers or publicly available on the internet to write the program to run the sensors themselves. For this study, this equipment collected data about the environment (i.e., temperature, light level, air pressure) and select biological metrics (i.e., corporeal movement and abroad range of canine vocalizations) of the dogs wearing the harness.

Format and Structure

I have used the structure of a scholarly journal article to organize my dissertation, as I have for the majority of my peer-reviewed publications in scholarly journals throughout my doctoral career (please note that I was previously published under a former legal name: Legge, M. M.; Flanders et al., 2018; Legge, 2016; Legge and Taha, 2017; Legge et al., 2018; Legge, Flanders, and Robinson, 2017; Legge and Robinson, 2017; Flanders et al., 2017; Flanders et al., 2016). This format is very basic. It is known as the IMRaD format, which stands for introduction,

methods, results, discussion (George Mason University, 2021). Due to the depth of the study, this format was developed out as needed. In this dissertation, my introductory section includes this introduction, as well as literature review and theory chapters. These provide context for the study, a general outline, and define the scientific niche. My method section includes my method and data analysis chapters. My results section is my findings chapter, which describes the data, and finally, my discussion includes my discussion, limitations, and conclusion chapters.

Following this introduction, which includes the background information, rationale, and purpose of the study, is a literature review that is focused specifically on OTH animals and social work. I have reviewed a broad range of literature related to this field beginning with Levinson in 1962, the first article published in this field to my knowledge and concluding with work published in 2020. I attempt to capture the nature and results of this body of work and highlight a gap in the scholarship: the consideration of the perspectives of the animals involved in this work. I discuss the few studies relevant to the field that can be credited with prior attempts to accomplish this, and in doing so provide a rationale forthe continuation and elaboration of this project.

Next, I outline my analytical approach for this study in the theory chapter. I developed this lens predominantly over the course of my comprehensive exams, and I focused on two component theoretical frameworks, a post-humanist lens informed by decolonial Indigenous knowledges. I also discuss critical animal studies, which is a prominent interdisciplinary influence on my research, and necessary to the process of working toward decolonizing contemporary views and perspectives in this area of scholarship. Because of my positionality as a white researcher in a settler-colonial context, I explore the role that cultural appropriation

plays in my work and analytical process, and I outline my experiences with Indigenous solidarity activism which has contributed to my decolonial outlook. The influence of anthropocentrism on theories of OTH animal subjectivity is significant, but in this study, I also examine other influential theories, including cyborg theory, theories of composite beings, relationality, and (non-)situatedness. These are all colonial constructs; however, they are central to the posthumanist body of scholarship. Despite their utility, I hope to acknowledge that the originators of these ideas are not the Eurowestern scholars whose works are cited in this dissertation, but Indigenous knowledge keepers. The large part of Indigenous knowledges is not citable, and perhaps should remain inaccessible to white students such as myself, but that means that they are often invisiblized within contemporary scholarship. I conclude my theory chapter by suggesting a potential path forward that is congruent with this study and my analytical lens: an ethic and politics of love as articulated by BIPOC scholars bell hooks and Philip McKibbin.

Following this is my method chapter, which describes my study design, data analysis process, and my rationale for their use. I outline my mixed-methods study, which uses critical ethnographic and research-creation methodologies as well as digital scholarship approaches. This section also describes the recruitment process for this study as well as the human and non-human participants involved and details the data collection techniques.

The findings chapter describes the outcomes and results of this study and outlines the major themes that emerged through the data analysis process. These are analyzed in the next chapter, the discussion, which explains how the results compare with previous relevant research (the parameters of which are discussed in my literature review) and considers theoretical implications of the themes discussed in the findings section. Finally, this dissertation concludes

by outlining the limitations of this study, as well as the implications for social work.

The Influence of Other than Human Animals

Like many social workers, I chose to enter the field based on my commitment to the pursuit of social justice, one of the core values of social work in Canada (CASW, 2005). I did not anticipate what a complicated relationship I would grow to have with this value, and the ways in which it intersects and impacts the other values that I hold, in addition to the other core values of the profession. It has become increasingly evident that "social justice" is an ill-defined and contentious concept within the diverse field that we call social work. This is further complicated by the culturally and politically unstable era in which I have worked and studied, a time coming to be known as the "Anthropocene," which is a time in global history primarily characterized by human-driven climate change (Gibson, Rose, & Fincher, 2015). In the Anthropocene, I find myself confronted by and preoccupied with the reality of an uncertain future for our society and ultimately for the planet. I question how we as social workers can remain hopeful in our pursuit of social justice while acknowledging the potentiality of many possible futures, some of which are bleaker than the obligatory optimism in our field would have us believe (Berlant, 2011; Wilson, 2016). This is a salient consideration for Canadian social work in particular since as Hird points out, “Canada is currently the highest waste-producing country in the world” (Muñoz, 2015, p. 214). As I have wrestled with this question over the years, the importance of a socially and environmentally sustainable social work practice has become paramount in my mind.

I had been exposed to some scholarly work during my Bachelor of Social Work (BSW)

degree at Dalhousie on OTH animals and social work. Due to a personal history of involvement in veganism and animal liberation activism, my interest in combining two of my greatest passionswas piqued. I adopted my first companion animal as an adult, a rescue racing greyhound called Dinner Date, or D, for short. She was calm, quiet, bright, intelligent, and thrived on human attention. It did not surprise me that she passed her volunteer therapy dog certification with flying colours.

As I began my social work career, I was able to bring D with me to my place of work, an organization focused on serving youth experiencing homelessness in Halifax, Nova Scotia. The youth who I worked with formed a relationship with D quickly, and I was flooded with stories about the importance OTH animals had in their lives. It became evident to me that to many of the youth, animals played a significant role in their social world. This was easy for me to relate to, having had many comparably formative experiences throughout my life, living and working with animals. In this and other ways, D was able to facilitate the relationship-building process between myself and the youth with whom who I worked. This particular benefit of involving animals in supportive practice has been documented as far back as Levinson (1962), who wrote one of the earliest available articles on the subject of AAI. I became even more interested in learning about OTH animals and social work after I had had this experience with D and noted some of the benefits of AAI firsthand. I also noticed several ways in which bringing D with me to work changed my experience of practicing social work, in addition to those experiences had by the youth.

In the years between the completion of my BSW and the beginning of my doctoral studies, my passion for my area of interest only increased, and eventually I found a job that allowed me to explore these interests as an area of practice in preparation for future scholarly

pursuit. Unfortunately, my experiences as a practitioner in the field were mixed and changed the way that I thought about involving OTH animals in social work practice, and the ways that we conceptualize this work both theoretically and in research. This change was impacted by a sheep named Atlas whom I worked with as in an animal-assisted interventions (AAI) program in rural Ontario in 2013. Atlas was a big sheep, and a calm soul. I'm not sure that I can say that Atlas and I ever knew each other well, but I feel I knew him deeply, even if in perfect sheepish fashion, he was a little indifferent toward me.

Atlas spent a lot of time outside. He shared his space with a small group of farm animals of various species, and he received care and frequent visits from humans who were part of a residential psychosocial program that shared the plot of land that he lived on. He liked getting scratches from humans, he was sheared a couple of times a year, he ate grass, and he also worked. Residents of the program learned how to clean him, how to feed him, how to give him water. In that, he would get hay in his eyes when an inexperienced caretaker launched his dinner unceremoniously into his dimly lit stall, he got his wool tugged and pulled on when folks were a little careless when removing burrs, and he got dragged around by his halter when someone underestimated the physical power they might have over a very large sheep and they weren't sure how to safely direct him where they wanted him to go. What I remember about Atlas the most is his gentleness, and his softness. My eyes well with tears whenever I read and remember his story.

Atlas had a stall mate named Thor. They looked so similar that you could barely tell them apart in the field. For some reason, I was more drawn to Atlas – perhaps Thor wanted less attention, or perhaps we were otherwise less kindred for ways that were not obvious to me. It can be difficult to determine the exact rationale behind the intricacies of interspecies relationships

when it is impossible to communicate in ways that both parties can claim to understand. Either way, the two sheep were lovely creatures, and seemed content enough to share the space that they were allocated in the barn. They weren't the problem. The space itself was the problem.

Over years of being cared for by people without formal training or a lot of experience in how to care well for livestock, the stalls themselves had fallen into disrepair. The budget for the animals at this program was secondary to the more obviously human-focused aspects of the program. The biggest problem in the barn was that it had been altogether too long since they had been on a proper schedule of mucking out, or deep cleaning. This resulted in a thick layer of soiled bedding between the feet of these sheep, and the rubber mats of the barn floor. Some of that bedding had likely been sitting in those stalls for years.

Every day, weather permitting, the animals would go outside – and these animals were hearty. I remember bringing Atlas back inside, him happy as could be, and me picking chunks of ice from the Canadian winter out of his coat, while he munched on his evening meal. Every evening, the animals would return into the barn – low ceilings, small windows, a few bare lightbulbs to brighten it in the dark – and Atlas and Thor would take a big step up from the ground, into their stall. Layer upon layer of straw, spilled water, excess food, manure, and urine under their feet.

Thor's death was the most gruesome. I was never given a proper report about what happened, and I expect that that is in part because a thorough report was never made. There is no standardized accountability for the care of OTH animals involved in social service programming in Canada. In my mind, there is no way that I can separate the tragedy of Thor's death from that thick mat of waste that was the carpet of his home. He was found one morning, dead beside Atlas in their shared stall, surrounded by a small puddle of fluid that had presumablyescaped his

body. No one knew how long Atlas had been in the stall with his deceased companion like that. They hadn't been checked on since their dinner the day before. I wasn't present when the technicians came to remove Thor's body, but the description I heard of the event is stuff of nightmares. For reasons unknown to me, Thor was dragged on the ground out ofthe barn and across the yard to the waiting vehicle of the technicians. By the time that I came to work that morning, all that was left was a thick trail of slime, greenish and strong-smelling, that marked the path his body had taken, like a snail's trail. The barn manager explained to me that the fluid had escaped Thor's mouth, and that she had no idea what it could be. She said that we would have to finally clean out that stall, since the spot where Thor had died was so putrid.

For the next several days, Atlas shared space with the big goats, rather than be alone in the festering stall while it was being gutted. The residents and staff who were tasked with removing the waste from the sheep's stall worked while the animals were out of the barn. The work required eye and respiratory protection, and even with personal protective equipment (PPE), the stench of ammonia that rose from the floor of the stall was so strong, the work had to be done in shifts and left the skin of those working red and irritated from exposure. It wasn't long before Atlas, too, began to show signs of illness. Finally, the vet suggested that Atlas would have to be euthanized or suffer until he died of natural causes.

I was with him when he died. I remember the way that his big body lowered slowly to the ground, with our barn manager's hands supporting him. I remember the way his knees slowly bent, and his eyes closed, and with great, calm, sighs, he stopped breathing. I remember his lifeless, woolly body, lying on the ground in the barn, the three of us humans beside him as he finished his job and left this world. I remember thinking, what a shame, and lamenting how it could have been prevented.

The stories of the experiences of animals involved in social work are invisible; Thor and Atlas' story is just one of many that I could tell, and I am just one person. These animals negotiate complex identities: they are at once property, family members, workers, and social subjects (Francione, 1995; Risley-Curtiss et al., 2006; Coulter, 2015; Braidotti, 2013; Corman, 2012). Without further research, we will not understand how involvement in social work can impact the experiences of these complex OTH animals, and as the above anecdote illustrates, this can result in tragic consequences.

Haunted

Newfoundland folklorist Dale Jarvis writes, "Ghosts, almost by definition, are elusive creatures. They flit in and out of our field of vision and the stories we tell. They are ephemeral beings, hard to pin down" (Jarvis, 2004, p. 138). Nevertheless, the ghosts of the animals who I have worked with and shared my life with never seem easily shed as I move forward. I am haunted in the sense that in everything I do, I sense the shape of their absence. In the words of Avery Gordon, they *cajole* me to reconsider that which we think we know, or do not know.

I am a person with a history of trauma, and it imposes itself on my memories of these OTH animals, particularly their deaths. They are a part of me, for better and worse. "A major component of trauma is a re-experiencing of the past with the visceral intensity of the present" (Morrigan, 2017, p. 54). These pieces of the past pull backward through my present and echo into my future. In this strange and ghoulish haunted temporality, I find vast potential for research and change. Morrigan (2017) writes that traumatized experiences of time are creative, flexible, and non-linear, and they open up possibilities for different ways of being in the world. It is in

these non-normative spaces, if we are able to move beyond the perceived inconveniences of them, that we can find innovative potential.

Cybernetic Ecology

All of the benefits that I and the service users who worked with D experienced were true, and the juxtaposed horror and gore that punctuated my work with Atlas were just as true, and the cognitive dissonance that radiates from comparing these two experiences side by side is glaring. As I attempted to process this cognitive dissonance through my ongoing intellectual pursuits in social work, I had two critical encounters with texts that disrupted my thought processes. First, I encountered a poem by Richard Brautigan (1967), called "All Watched Over by Machines of Loving Grace," which I have included as Appendix A. The gentle, playful beauty of this poem struck me, and I began thinking about why it was I came to want to do research focused on OTH animals in social work.

The second critical moment was when I spent some time going back to a few queer theory texts that had been on my shelf. Some of these materials were new and intriguing items that I had come across and had yet to explore, and others were older materials that I had been inspired by in the past. I chose to spend some time with them in an effort to counteract a sense of disconnectedness with the material that I was encountering in my graduate studies. These materials will be discussed in greater depth in the theory chapter of this dissertation.

In encountering the poem, and by exploring queer theories more deeply, I realized how much the logical, linear story that I talk about the background of my research leaves out. Feeling inspired, I was reminded of the questions posed in Davies (2005), and began to ask myself what,

as an academic, it is that I long for. There are countless stories that I could choose to tell that would begin to answer that question, and I feel that the stories that I always tell about my experiences with OTH animals in social work are only one small part.

What I long for as an academic is not limited to unmasking knowledge about any one aspect of AAI, or the simple idea of provoking discussion around OTH animals and social work more generally – although those are intellectual pursuits that I find worthwhile. What inspires me is the notion of an "interdependent web of existence of which all subjects, human and otherwise, are a part." I see that idea as a source of comfort and hope for the future of our world. This notion, the wording borrowed from the principles of my Unitarian Universalist faith community (CUC, 2014), has influenced me throughout my social work education.

At times, this has meant that I have found my own values to be fundamentally at odds with the values of my profession. As a Unitarian Universalist (UU), one of my personal and spiritual values is well-articulated by one of the seven principles of my faith community, which reads, "Respect for the interdependent web of existence of which we are a part" (CUC, 2015, n.p.). However, contemporary critical social work has staked its claim as a fundamentally anthropocentric discipline, that is to say, human focused. Some scholars have asserted that the anthropocentric discourse is "the central organizing principle of western social work" (Hanrahan, 2011, p. 278). Our first core value, preceding our professional commitment to pursue social justice, is exemplary of this. The Canadian Association of Social Workers Code of Ethics provides a list of core social work values. The first value reads, "respect for the inherent dignity and worth of persons" (CASW, 2005). Some scholars within the field are critical of the notion of "persons" as a point of departure for justice-oriented social work, since the humanity inherent in this word is implied and well understood. It is worth noting that these values have not been

revised or updated in more than a decade. Social work consistently neglects to recognize the subjectivity of any non-human figure, including OTH animals. This is particularly salient because AAI have been in use in social work and related therapeutic fields since 1792 (Reichert, 1998), and their benefits are widely documented (Wiggett-Barnard & Steel, 2008).

My hope is to engage in research that begins conversations about how we move away from anthropocentrism in my professional field. This discourse, along with other structural barriers, prevents the achievement of the type of interdependence that I feel is so powerful and necessary in the world.

Martinelli (1997) explores the notion of anthropocentrism in considerable depth. There are two broad categories of anthropocentrism: default anthropocentrism, which is equivalent to what Ferré (1994) identifies as an inescapable perspectival anthropocentrism; and binary anthropocentrism, which is a problematic discourse based on either qualitative or quantitative dualism between humans and non-humans. Perspectival anthropocentrism is the present reality that humans cannot think in any way other than as a human (Ferré, 1994). Martinelli (1997) confirms this, asserting that perspectival anthropocentrism is an unavoidable point of departure for all human thought. We do not yet have technology that allows humans to genuinely experience the world the way that another animal might.

Dualistic anthropocentrism is a dominant discourse which asserts that humans are the only subjects with intrinsic value, whereas non-human subjects have only instrumental value (Brown, 1995; Martinelli, 1997). From this point forward, whenever the term "anthropocentrism" is used, it will be in reference to this normative dualistic anthropocentrism. The distinction between perspectival anthropocentrism and dualistic anthropocentrism is essential, given that some scholars have leveraged perspectival anthropocentrism as an argument

against the legitimacy of attempts to problematize the discourse of dualistic anthropocentrism. Hayward (1997) argues that "human reference is ineliminable even when extending moral concern to nonhumans" (p. 56). Martinelli (1997), however, suggests that acknowledging the existence of anthropocentrism as a point of departure may be construed as positive, as opposed to the reification of a socially constructed notion of perspectival neutrality.

From a social justice perspective, anthropocentrism can no longer be overlooked. It has been argued that although it is fundamental, anthropocentrism is not at fault for all forms of oppression. However, as Brown (1995) notes, "If all human liberation were to be achieved, nature would still be considered inferior and subordinate to anthropocentric concerns" (p. 3). Anthropocentric discourses are problematic because they are both reflective and constitutive of damaging hierarchical social structures which exacerbate inequality for all beings, both human and non-human. In these hierarchical structures, humans are the highest valued of all beings. Currently, non-humans are neglected by social work practice, scholarship, and education.

What I long for is to see this interdependent web that I described above respected and embodied, what this will require is a great deal of disruption of dominant discourses, anthropocentrism not least among them. Coates (2003) states, "With the realization of interdependence and connectedness, humans can become more aware of the severe consequences of anthropocentric thinking. Social work can move out of its reactive and supportive role within modernity and become an empowering and proactive force in the development of a socially just and sustainable social order" (p. 56).

Perhaps it is fitting that in thinking about why it is that I have come to want to conduct the doctoral research that I have proposed, I would find myself with my own disrupted thought processes. The focus of my doctoral research is on the well-being of humans and other animals

in shared social environments. The research I conducted in my MSW, on the theoretical and practical tensions experienced by social workers using interventions involving humans and other animals in anti-oppressive practice (AOP), provided a basis for me to explore AAI and social work practice more deeply in doctoral research in order to gain a deeper understanding of this field. I hope that I can ultimately gain some insight into the larger theoretical questions I described above, all of this to the end of moving toward a more accessible, effective, sustainable, and socially just professional field.

Literature Review

In this chapter, I will review the body of literature that is relevant specifically to involvement of OTH animals in social work practice. This chapter is part of the introduction to this study, which should provide context and help to define the scientific niche of which it is a part. There are many relevant scholarly contributions to knowledge which have been excluded from this literature review that have nevertheless made relevant and important observations about OTH animal wellbeing and interspecies relationships, particularly within the context of critical animal studies. The most noteworthy of these may be cognitive ethology, a field to which I make reference in this dissertation, but do not focus on. I defined the scope of this study as situated within the field of social work, with a focus on posthuman theoretical perspectives and intentionally prioritizing decolonial knowledges. It would be my recommendation that for future research about OTH animals and social work, particularly if the study uses technology of any kind for data collection, the scholarship of cognitive ethology be more thoroughly integrated and a more exhaustive literature review in this area be conducted.

Process

The works that I have reviewed here were collected primarily through multiple structured and in-depth literature reviews between September of 2014 and the fall of 2019. During this time, I worked as a teaching assistant, and my students frequently asked me if I had chosen my area of study so that I could just all spend my time reading about dogs. Admittedly, that was one of the benefits of this part of my research process! I conducted searches in social work and other

social sciences and human services databases for peer reviewed scholarly publications in English using keywords such as “animal-assisted therapy”, “pet therapy”, “animal-assisted interventions”, “animal-assisted activities”, “human-animal bond”, “one health”, “therapy dog”, “therapy pet”, and “canine-assisted”. Some of the databases that proved to be most fruitful in these searches were Academic Search Premier, Social Sciences Abstracts, the Social Sciences Citation Index, Social Services Abstracts, Social Work Abstracts, PsycINFO, PsychARTICLES, and Sociological Abstracts. I reviewed literature from as far back as Levinson (1962), the earliest available article on the subject of AAI.

During the last literature reviews, conducted in late 2019, I made the following observations. First, although I would not consider *Anthrozoös* to be a very mainstream academic journal, it continues to be very prevalent in the relevant search results. This journal has been a great resource to me over the course of my academic career, and it continues to flourish in the interdisciplinary field of “animal studies”.

There are several scholars who have produced multiple publications in the field of social work and OTH animals in the last five years. I noted Crossman (2017), Krause-Parello and Gulick (2015), O’Haire (2010), Signal et al. (2017), and Taylor (2017) in particular. There were a few prevalent themes in the body of relevant literature produced in the last five years as well, including AAI with veterans, grief, benefits of AAI for humans, and interventions related to PTSD. As a neurodivergent scholar myself, I was surprised to find that my 2019 structured and in-depth literature search still returned articles about “curing” autism and working with dolphins in AAI. Given that the notion of finding a “cure” for neurodivergence and working with highly intelligent ocean mammals in captivity have both been widely criticized in contemporary media, activism, and scholarship, these are both persistent problematic patterns in this scholarly field

over the past 50 years that continue to be reified in these works.

After compiling lists of articles broadly applicable to the field of animals and social work that emerged from these searches, I screened them for relevance by reading their abstracts, and later reading complete articles. I determined relevance by the type of animal that was involved in the study and by the types of services being offered. I focused on dogs and other animals that are typically considered domesticated, and therapeutic or human services included in or adjacent to social services.

I eliminated articles that were specifically focused on homelessness and pets, as well as research focused on service animals or guide dogs who are purpose-trained to work with a single human. Both of these areas of practice have some overlap with social work; however, they are distinct in that the animals involved do not work alongside a practitioner in order to deliver services. I also eliminated articles which were meta-analyses of the literature available on AAI, because I was essentially repeating the work that these studies had partially completed by conducting my own discipline-specific literature review.

This chapter is broken into sections, developing and exploring the field of animals and social work broadly, as well as more specifically examining the benefits and challenges of AAI, oppression and power in the field, and consent when working with animals. Throughout these exhaustive structured and in-depth reviews, the literature that I was able to find that included any consideration of the experiences of the OTH animals involved in interventions in any way was very sparse. I will highlight these articles in particular; however, this limitation in the scholarship is evident. This study will begin to address this significant gap.

Animals and Social Work

Progressive, contemporary theoretical frameworks are sparsely represented in the literature on AAI. Despite extensive searching, I was only able to find a small number of studies from psychosocial (e.g., Dell et al., 2011; Perkins, 2018; Policay and Falconier, 2018), structural (Smith, 2019), feminist and anti-racist (e.g., Risley-Curtiss, Holley, and Wolf, 2006), and critical and anti-oppressive perspectives (e.g., Hanrahan, 2013; Faver, 2009; Ryan, 2011; Burgon, 2011; Legge, 2016; Pitheckoff, McLaughlan, and Medeiros, 2018). This dearth indicates to me a lack of theoretical rigor in the literature on AAI. While the social work field is highly critical of the biomedical industrial complex in some regards, this is the dominant theoretical framework for scholarly work in the field of study of social work and OTH animals.

Positively, geo-political diversity is one area in which the literature on AAI has expanded significantly in more recent years. Although the dominance of a Eurocentric perspective is still clear in this body of work, prior to 2015, the literature that existed in the field of AAI originated almost exclusively from an US American context (e.g., Bekoff, 2007 and 2008; Black, 2012; Donohue, 2005; Faver, 2009; Geist, 2011; Jasperson, 2010; Lasher, 1998; Levinson, 1962 and 1984; Marcus 2013; Netting, Wilson, & New, 1987; Risley-Curtiss, Holley, & Wolf, 2006; Sable, 1995 and 2013; Siegel, 2011; Walsh, 2009a and 2009b; Wolf, 2000; Gonski, 1985; Jalongo, Astorino, and Bomboy, 2004; Monsen, 2001; Kahn et al., 2008; Peacock, 1984; Gee et al., 2009; Rew, 2000; Sobo, Eng, and Kassity-Krich, 2006; Esteves and Stokes, 2008; Kurdek, 2009; Reichert, 1998; Mallon, 1994). Problematically, there were few other regions represented in this body of work.

In previous searches specifically focused on exploring this gap, I was able to find works from: Burgon (2011), a study from United Kingdom; Odendaal (2000) and Wigget-Barnard and

Steel (2008) are from South Africa; and Slatter, Lloyd, and King (2012) from Australia, all Eurocentric settler-colonial or colonizing academic environments. In addition, there was sparse representation of a settler-colonial Canadian perspective (e.g., Legge, 2016; Dell et al., 2011; Hanrahan, 2011; Hanrahan, 2013; Zilney and Zilney, 2005). In more recent searches, I was able to locate articles that indicate the geographic expansion of the field of study on AAI. For example, Australian scholarship on animals and social work is represented in a significant way, with relevant articles including Connell et al. (2019), Dunlop and Tsantefski (2018), Jau and Hodgson (2018), and Signal et al. (2017). The Canadian field has also expanded, more recent relevant publications including Binfet (2016), Binfet and Passmore (2017), Casey et al. (2018), and Lannon and Harrison (2015). In addition, Machová et al. (2018) is from the Czech Republic, Minke (2017) and Thodberg et al. (2016) are from Denmark, Busch et al. (2016) is from the Netherlands, and Carlsson (2016 and 2017) and Handling et al. (2018) are from Sweden.

Benefits and Challenges of AAI

Despite the need for ongoing research on AAI in social work practice, particularly in progressive theoretical perspectives such as anti-oppressive practice (AOP), critical social work, postmodern and posthumanism, and Indigenous perspectives, the evidence presented in the existing literature seems to overwhelmingly support the benefits of AAI for humans. There is a vast body of literature on the positive benefits of the human-animal bond in a therapeutic context (Black, 2012; Handling et al., 2018; Hanrahan, 2013; Jau and Hodgson, 2018; Minke, 2017; Putney, 2012; Risley-Curtiss, 2010; Smith, 2019), as well as the benefits of AAI specifically (e.g., Balluerka et al., 2015, Becker, Rogers, and Burrows, 2017; Burgon, 2011; Connell et al.,

2019; Cooke and Farrington, 2015; Frederick, Hatz, and Lanning, 2015; Kloep et al., 2017; Kurdek, 2009; Levinson, 1962; Machová et al., 2018; Pitheckoff, McLaughlan, and Medeiros, 2018). Psychologist Dr. Aubrey Fine has been practicing AAI since the 1980's and penned the *Handbook on Animal-Assisted Therapy* (Fine, 2010). This definitive text offers a succinct compilation and discussion of the benefits of AAI for humans which are explored in the larger body of literature described above. Fine outlines four categories of benefit to those working with animals: (1), effects on loneliness, (2), socializing effects, (3), motivating effects, and (4), physiologic and calming effects (Fine, 2010, p. 64-73).

Much of the literature on therapeutic interventions also focus on the benefits for youth. Levinson (1962) explains that animals who participate in AAI play many roles for practitioners who work with young people. Some roles which are traditionally occupied only by other humans, such as companion, friend, servant, admirer, confidante, toy, team-mate, slave, scapegoat, mirror, trustee, and defender.

The literature highlights the participation of an OTH animal in service provision in providing a sense of consistency, control, comfort, confidence and ability, and lowering of anxiety for young service users (Dunlop and Tsantefski, 2018; Flynn et al., 2019; Gonski, 1985; Krause-Parello and Gulick, 2015; Krause-Parello et al., 2018; Levinson, 1962; Levinson, 1984; Burgon, 2011; Mallon, 1994; Kurdek, 2009; Perkins, 2018; Reichert, 1998). Due to the prevalence of therapy dogs for the purposes of stress reduction and outreach to post-secondary students on campus, there is also a growing body of literature that suggests the potential effectiveness of these programs, and calls for further research in this area (Barker et al., 2016 and 2017; Binfet, 2016; Binfet and Passmore, 2017; Crossman, Kazdin, and Knudson, 2015; Daltry and Mehr, 2015; Jalongo and McDevitt, 2018; Jarolmen and Patel, 2018; Lannon and Harrison,

2015; Trammell, 2017).

It is a problematic limitation that the literature that exists on social work and AAI is very focused on one on one, micro-level, social work practice with individuals, and thus neglects the ethical consideration of OTH animals involved in working relationships in the field. Despite theoretical and practical advancements in critical social work, and our recognition of the necessity of mezzo and macro analysis and practice to achieve socially just results in our work, the structural and systemic effects of AAI and human-animal relationships formed through social work have not been explored. Further research on AAI is that moves beyond the one-on-one practice level is much needed. Scholars assert that the field of social work continues to neglect practice strategies that involve OTH animal involvement in research overall (Hanrahan, 2011, 2013; Risley-Curtiss, 2010; Ryan, 2001; Wolf, 2000).

Oppression and Power

It is necessary to critically explore issues of anthropocentrism, speciesism and the inherent privileging of humans over other animals based solely on their species membership (Putney, 2012; Ryan, 2011; Wolf, 2000). This is a crucial dynamic of social work practice involving animals. Yet, all of the literature in the field of social work and animals is focused on the human populations, with the scant exception of three articles which will be discussed in depth later in this section (Hatch, 2007; Burgon, 2011; Charles and Wolkowitz, 2017). The OTH animals involved in these studies are referred to exclusively by their species designation (i.e., dog, cow, horse). Three publications – Hatch (2007), Burgon (2011), and Charles and Wolkowitz (2017) – included the involvement of animals in their studies. Burgon (2011) centred the horses

in her study on equine-assisted learning/therapy with youth through the simple act of naming them and describing their lives and personalities in the study. This alone can be considered radical within this body of literature, in which this is rarely done.

Hatch's (2007) study, about volunteer-based AAI with shelter animals visiting seniors' residences, asked what the effects of involvement in the program were on the OTH animal partners. As part of her study, she assessed the OTH animal response to their volunteer experience using visual interpretation of their body language, cross-referenced with interview data. Hatch (2007) concluded that involvement in these programs raised concerns for the wellbeing of the OTH animals, including risk of physical or emotional harm ranging from increased stress to dehydration.

A decade later, Charles and Wolkowitz (2017) took on a similar project as Hatch (2007), evaluating the experiences of the dogs involved in their study on AAI on college campuses along with the experiences of human participants. They used participant observation and photograph analysis to "capture the nature of the dogs' participation in ways other than through the words of the humans involved" (p. 305). Much like my current study, Charles and Wolkowitz's (2017) research took a multi-species ethnographic approach to document experiences of animals involved in a program alongside experiences of humans. This study aimed to not only consider humans; animals were also included as social actors.

With the use of photography, Charles and Wolkowitz (2017) documented animals' experiences in these programs, alongside ethnographic techniques. The results of this study were troubling and confirmed much of what Hatch suggests: "Our evidence suggests that students' accounts of their interactions with the dogs are frequently self-referential and objectifying, with students' appreciation of the dogs' behaviour usually related to their own needs […],"(2017, p.

318). Charles and Wolkowitz (2017) later argue, "The patience of the dogs and the lack of active engagement with individual students emphasizes that these visits are not about establishing relationships or active, two-way interactions but about making dogs' bodies available to touch. This reinforces both their subordination and objectification (Tuan, 1984). Furthermore, guardians exercise control in order that this can be accomplished" (p. 319).

The deep concerns raised in Hatch (2007) and Charles and Wolkowitz (2017) indicate a substantial gap in the literature about the perspectives of animals alongside human experiences involved in social work practice.

Consent and OTH Animals

Consent is the basis for ethical research. Cuénod and Gasser (2003)note that informed consent for human research participants was developed in order to promote individual autonomy and to encourage rational decision-making. These issues are exacerbated when participants who are involved in research are actually unable to give consent – that is to say when subjects are unable to communicate with researchers due to physical incapacity or other limitations, or if they are of an age or lifestage where consent is not possible to obtain. In cases where these issues have emerged for human research participants, there have been some alternate models of consent proposed that while no less complex or problematic than the traditional model, open possibilities for considering the application of the concept to OTH research subjects. One of these that is currently in use in research with human subjects is proxy consent, which allows a legal representative of a research participant to consent to participation or not on their behalf, for example, a parent may consent to the participation of an infant in a research project.

Unfortunately, research has demonstrated that decisions made by proxy may not always reflect the interests of the potential participant (Mason et al., 2006). Despite the limitations of the concept of free, informed, and ongoing consent as it applies to human participants involved in the research process, it remains the ethical standard. Although the case has been made by some scholars that some OTH animals involved in research could be constructed as vulnerable subjects in much the same manner as some human participants, members of other species continue to remain objects research, rather than subjects, and their treatment is handled by a separate ethics board.

I consulted with the Animal Research Ethics Board (AREB) of McMaster University regarding the parameters of this study. It was determined that the OTH participants in this study were not considered to be at risk of harm according to their standards, and the study was exempt from requiring AREB approval (see Appendix I). As such, I was tasked with the responsibility of navigating the concept of consent as it applied to the OTH participants of this study independently. As a long-time animal liberation activist, having shared my life with companion animals since age 7, and having a level of expertise in dog behaviour specifically, the enormity of this responsibility was intimidating for me. I did choose to employ basic proxy consent in this study, despite its limitations, as far as determining initial involvement in this study. That is to say, the caregivers of the dogs who participated in this study volunteered themselves and the OTH animals in their care for participation and gave informed consent on behalf of themselves as well as the dogs (see the consent form included as Appendix F).

In 2014, a small body of academic literature emerged addressing the ethical issues around involvement of chimpanzees in research, and particularly their capacity to consent. This small

body of work determines that chimpanzees, like human research participants, are capable of acting autonomously, and make a case for them to be categorized as vulnerable subjects in research with moral status closer to that of humans. In order to achieve this, a model for consent was proposed based on pediatric bioethics (Beauchamp and Wobber, 2014; Fenton, 2014; Johnson and Barnard, 2014). Johnson and Barnard (2014) suggest that proxy decision makers might be one option for OTH animals to engage with consent, but as mentioned above this model has some inherent flaws, such as the potential to inaccurately reflect the interests of the actual subjectin question (Mason et al., 2006). Fenton (2013) identifies that some models of consent used in pediatric research have the potential to be applied to research with OTH animals with greater success. Three levels of decisional capacity with specific reference to consent are outlined, including informed consent, assent, and dissent. Fenton (2013) points out that informed consent is often inappropriate for use with children, and that assent can be appropriate for some older children when the information conveyed to them is developmentally appropriate, but that even those young children who are not capable of assent are often capable of expressing dissent, as aremany OTH animals, including chimpanzees. Dissent requires the capacity for distress, pain, or stress; the capacity to anticipate future occurrences of such experiences; and the ability to express that such experiences are unwanted (Fenton, 2013). As chimpanzees have the capacity for all of the above, engaging dissent as a level of decisional capacity around consent for chimpanzees involved in research maximally respects the agency of these OTH subjects (Fenton, 2013).

While the study has a singular focus on chimpanzees, there is no reason why this speciesist limitation needs to remain over time. OTH animals involved in research of any kind are accorded low moral status due to speciesism, and are subject to inherent, situational, and

pathogenic vulnerabilities. The capacity for communicating dissent to humans to interpret dissent from many OTH animals is present, which opens space for us as researchers to engage with the notion of consent with a variety of OTH subjects.

In order to attempt to consider the wellbeing of the canine participants in my study as fully as possible, I designed this research project to be as non-invasive as possible for them, particularly where the use of emergent sensor technology is concerned. In the section of this dissertation entitled Use of Technology in Research, I have discussed other non-invasive technological methodologies previously used for data collection with OTH animals. Some of the approaches discussed, such as those used by cognitive ethologists Mark Bekoff and Barbara Smutts, were developed specifically in response to violent lab-based research methodologies conducted with OTH animals as their subjects. Unfortunately, many of these methodologies are prohibitively expensive for researchers, particularly for those who share some of my experiences of being queer, trans, disabled, and being the first in my family to attend university. Over time, technologies are becoming more affordable and miniaturized (Pschera, 2016). Although the environment faces unprecedented difficulties in the Anthropocene, these technologies, particularly when employed in relation with OTH animals, can give us unprecedented insight into the world that we inhabit together (Pschera, 2016). Part of the reason I chose to work with the technologies that I did in this study was because they were the most accessible to me. I hope that by proving their potential, this will allow other researchers to more thoroughly explore cost-effective, accessible technologies in research with OTH animals.

In addition, the interpretation of "invasive" with regards to the methodologies now common in cognitive ethology, while progressive for their time, can be seen as limited from a contemporary perspective. Like humans, many animals have sensitivities when it comes to being

photographed or recorded. One of my past dogs, D, who I have mentioned earlier in this dissertation, had an extreme phobia of cameras. While I worked to sensitize and reassure her about them throughout her life with us, she was at times completely incapacitated by the presence of cameras. This posed serious challenges for her when I engaged in AAI with her in my social work practice. She was also a highly intelligent dog, and was aware of cell phone and laptop cameras, so many workarounds that may have worked with other dogs to procure still or video footage of her while working or otherwise were not possible. The wearable technology that I used for this study avoids these sensitivities, while allowing researchers to collect data with OTH animals that may enhance traditional ethnographic data collected through field notes.

In addition, while photo and video recording may work well for cognitive ethology researchers, social work settings pose additional challenges for this approach data collection from a consent and confidentiality perspective. While my consent process for human participants was very straightforward, it may not have been possible to do data collection in the institutional settings where the dogs who participated in this study worked if I had been recording audiovisual material, particularly settings that focused on children and youth as service users. The sensor package allowed me to engage with the dogs themselves in an innovative way without engaging with a more bureaucratically challenging consent process and confidentiality considerations.

Finally, I feel that it goes without saying that OTH animals are not often able to consent or dissent to being photographed or filmed, particularly those working animals who are typically confined either within a space or using a leash while they are engaging in labour. For this reason, the sensors were also beneficial. Dogs are able to demonstrate dissent in wearing a harness, and in fact, I did work with one of the canine participants and her caregiver in this study to ensure her comfort, particularly the first time she encountered this technology, because it was unclear

whether or not she was willing and able to engage with it. In this way, the sensor pack is less invasive than recording technology.

I confirmed with the Animal Research Ethics Board at McMaster that AREB approval would not be required for this study (exemption letter included as Appendix I), aside from a requirement that the human guardians of the animals involved in this study be asked to sign consent on behalf of their animals and were also asked to confirm that the animals' vaccinations were up to date (the consent form has been included as Appendix F). I complied with these requirements during my data collection processes, and also engaged with the notion of allowing animals the option to dissent regarding use of the sensor package during this study. None of the dogs who participated in this study expressed any sign of dissent during this study that was interpretable by myself or by their caregivers.

In this study, I also endeavoured to afford to the OTH animal participants the same level of anonymity and confidentiality that is habitually offered to human participants in research. Each of them, therefore, has been given a participant code by which they are identified through the study, and aside from basic demographic information I have done my best to keep other aspects of their identities and specific roles as anonymized as possible. Although this perhaps means that the descriptions of the dogs that I have offered in this study are sparse, I hope that it affords them representation that is equitable given the level of consent that I am able to achieve.

Theory

In this chapter, I will discuss the theoretical perspectives that most heavily influenced this study. This chapter is part of the introductory section of my dissertation, and is intended to provide context for the chapters that follow, as well as define the scientific niche of the study. My dissertation is heavily influenced by the theoretical perspectives that I explored during my comprehensive exams, completed in 2015. My exams were designed to explored the question of the subject within the field of social work. Social work as a scholarly and professional field consistently neglects to recognize the subjectivity of any non-human figure, including OTH animals. My theoretical orientation during my exams was toward critical postmodernism, queer theories, and posthuman perspectives, with the hope that I would find areas of overlap in these fields that would form a disruptive theoretical framework that would be able to question assumptions in the field, deconstruct dominant discourses, and unsettle binaries. My project was to challenge the notion of discreetly anthropocentric subjectivity in social work, by exploring "post" perspectives on subjectivity. I was constantly returning to the poem that I have included in Appendix A: *All Watched Over By Machines of Loving Grace*, by Richard Brautigan. This poem encompasses for me one vision for a more equitable world, in which humans and non-human subjects of all forms are able to tenderly co-exist. In many ways, the themes that I developed through my comprehensive exams represent various aspects of the vision described by this poem: human subjectivity, OTH animal subjectivity, and technological subjectivity. The themes that emerged from the literature that I explored in these exams included interdependence, posthumanism, the subject, relationality, anti-colonial perspectives, love ethic, and cybernetic

ecology.

The literature that I selected to read often felt intensely personal, since it so often addressed the individual connection that the author had to animals, themselves, technology, and spirituality. These exams occurred at an intense time in my personal life, during which I found myself experiencing upheaval in some of the important intraspecies relationships in my life, taking medications to address my psychiatric disabilities for the first time, and mourning the loss of my cat, Jewl, who had been my lifelong companion for 18 years. Perhaps because of the intensity of my own experiences, and the nature of the works I had chosen to read for these exams, I found it impossible to separate my values and affect, and even my embodied self, from the intellectual work I was undertaking. I identified that I have passion for this project because it matters to me intellectually, but also ethically, affectively, and viscerally.

During my exams, I became aware of a moral and ethical weakness in the theories that I had chosen to explore. Theorizing in the area of posthumanism is not novel and draws heavily upon ideas that originated in Indigenous knowledges. Yet, these original sources of knowledge are intentionally invisiblized in the academic tradition. Upon this realization, I decided to attempt to prioritize, centre, and honour decolonial thought in my own work, particularly as the roots of the posthuman scholarly tradition. Due to the requirements of my scholarly field, I found it necessary to continue to engage with these Eurocentric theoretical works in my dissertation, however I attempt to do so alongside intellectual contributions from Indigenous and decolonial theorists in this study. In this project, I was intentional about resisting the Eurocentric limitation of the fields I was interested in exploring in my comprehensive exams, and over the five years following the completion of this component of my doctoral studies, I have explicitly sought out decolonial works. My inclusion of these works stems from a desire for scholarly rigor, as well as

the growing and long-overdue legitimization of Indigenous perspectives as valuable knowledge within social work.

In this chapter, I have therefore focused on two major areas of theoretical influence on this work: decolonial thought, with a focus on Indigenous authors and knowledges, and posthuman theoretical perspectives, drawn from the colonialist European scholarly tradition. I enter into my engagement with this literature with a huge amount of humility as a white colonizer scholar, and immense gratitude for the Indigenous people who have been willing to share their work and knowledges with me through various channels, particularly my supervisor, Dr. Bonnie Freeman. Despite problematic aspects which cannot go ignored, both of these epistemological and theoretical traditions inform my conceptualization of OTH subjectivity, which attempts to operate outside the anthropocentric construction of non-humans that is pervasive in social work and social services.

The theories that are expounded upon in this chapter have all provided significant direction for my dissertation project. This project informs and is informed by these bodies of thought, my worldview, and my relationship with social work practice. They have guided my research decisions, from conceptualizing the questions and objectives of this study to choosing my methodological approaches. They also inform how I conceptualize my research participants, the dogs in particular, and how I related with them, both directly and through the use of digital scholarship approaches. The theoretical perspectives explored have also impacted my biases through my data analysis process and have influenced the conclusions of this study.

This chapter is divided into four major sections: (1) anthropocentrism, (2) decolonial thought and Indigenous knowledges, (3) posthumanism, and (4) love ethic. In the first section, I briefly explore the concept of anthropocentrism, expanding on the brief explanation offered in

my introduction chapter. This section is meant to contextualize my dissertation project, which incorporates strong elements of critical animal studies, for a primarily social work audience. In the final section, I draw on the works of bell hooks and other non-white scholars to explore the concept of love ethic. Love ethic, or a politics of love, is an approach that I feel can provide fruitful pathways forward from the anthropocentric political moment that we are currently experiencing in society and social work. This final section is meant to provide a reconstructive aspect following the middle two sections of this chapter, which are primarily critically deconstructive in nature.

The section on decolonial thought and Indigenous knowledges provides an overview of scholarship from Indigenous authors that is relevant to questions around OTH animals and social work, and that is available for non-Indigenous consideration. In researching this project, I defined "Indigenous knowledges" broadly, including works from Indigenous thinkers, theorists, knowledge keepers, poets, writers, and more from around the world. While there are shared knowledges between these various bodies of thought, I do not intend to imply that this is a single, cohesive body of work, or that all of the approaches to decolonial thought in this chapter necessarily fit within a single homogenous Indigenous worldview. For future research, it would be preferable to focus on decolonial thought from the peoples who originally inhabited the land on which the research is being conducted. In this section, I also look at one sub-topic, appropriation and solidarity work, which is largely a personal reflection on my own engagement with Indigenous knowledges on and off the printed page during my dissertation project.

The third section of this chapter is on posthumanism, which I have studied in depth since the beginning of my doctoral program in 2012. This section, through eight subsections, charts this intellectual journey. First, I offer an introduction to the field of critical animal studies.

Although I am a social work academic, this growing field of study has influenced my scholarship since I was first introduced to it in my undergraduate degree, and this section provides a brief overview of the influential elements which I have engaged with for this project. Next, I offer a critique of colonialism in the field of critical animal studies, making crucial links between decolonial and Indigenous knowledges and posthuman theories. The third subsection introduces posthumanism, a branch of postmodern thinking that is congruent with Indigenous knowledges and challenges the notion of the human as a discrete category of being. This is particularly useful in questions of resisting anthropocentrism.

The final subheadings in the posthumanism section expand upon specific aspects of posthuman theory that I have found relevant to the themes of my dissertation study, and that have been compelling influences on my work. Non-human animal subjectivity was the major focus of my comprehensive exams and is very congruent with decolonial thought. Cyborg theory has helped me think through questions around digital scholarship approaches in social research. I also explain the notion of all beings, human or not, as composite, which builds on the ideas of subjectivity and cyborg theory to suggest a way to conceptualize the subject as interdependent on a molecular level.

Finally, I discuss relationality and situatedness. Based on ideas from queer theories, relationality offers a link between interdependence and the notion of the subject to suggest that it is actually through our relations with other beings that subjects are constituted. This perspective is congruent with decolonial and Indigenous knowledges. My last subheading, situatedness, or non-situatedness, addresses the relationally constructed composite subject and its link to society, and questions whether or not these posthuman subjects are fixed in their spatial and temporal orientation. This last section makes links between the digital scholarship approaches and theories

of digital technologies and the conceptualization of the subject, human and OTH, that has influenced this study.

(1) Anthropocentrism

Anthropocentric discourses that prioritize humans over other animals are unrecognized in social work, however, they have a negative impact on the profession and our ability to pursue social justice due to their reification of social hierarchies and oppression of OTHs. Coates (2003)writes, "With the realization of interdependence and connectedness, humans can become more aware of the severe consequences of anthropocentric thinking. Social work can move out of its reactive and supportive role within modernity and become an empowering and proactive force inthe development of a socially just and sustainable social order" (p. 56). As I outlined in my introduction chapter, aligning myself with this perspective and challenging anthropocentricdiscourses in social work has become an essential intellectual project for me.

In critical animal studies, Indigenous knowledges are marginalized in part because of the strength of anthropocentrism within Eurowestern scholarship and the energy and time expended on the intellectual project of its dismantling. At its root, anthropocentrism is a Eurowestern concept, rooted in notions of the centrality and supremacy of the human over other lifeforms, which is based on Christian cosmology. Indigenous political theorist Robert Geroux (2019), of Blackfeet (Amskapi Pikuni) descent, and Canadian Muslim scholar Azeezah Kanji (2017) write that the notion of human dominance and categorization according to the false nature/culture binary divide is central to the project of colonialism. In this pursuit, Indigenous peoples and

OTH animals are pitted against settler-colonialists on opposing sides of this divide (Geroux, 2019). By refusing to acknowledge the existence of anthropocentric discourses, never mind their influence on social work, we in the field are complicit in allowing colonial violence to continue. This violence impacts not only the OTH animals and other elements of the non-human world that are variouslyinvolved in and influenced by social work practice, but also Indigenous peoples.

In the Anthropocene, an era characterized in Eurowestern scholarship by a human focus on capitalist resource extraction, Lee Maracle (2015), from the Sto:Loh nation, asserts that this dichotomous relationship is unproductive. In order to move forward, decolonial thought must be centred, and a liminal spacefor collaboration that honours Indigenous knowledges must be found and engaged with.

Mohawk scholar, Kevin White (2019), and Philip McKibbin (2019a), of Pākehā (New Zealand European) and Māori (Ngāi Tahu) descent, both write that Indigenous knowledges upend colonial understandings of anthropocentrism and humanity's supremacy, by drawing on cosmologies in which humans are often the youngest and least experienced creatures that exist on earth, and therefore find ourselves dependent on other lifeforms for learning and survival. Mi'kimaq activist from Eski'kewaq, Margaret Robinson, states, "When you interact with wild creatures in their environment, you realize that the human being is not at the top of the great food chain but is part of a web of interdependence" (Castricano and Corman, 2016, p. 246). These perspectives are not only more inclusive but are also a much more productive and rich starting point for theorizing and considering the OTH animal in scholarship and research.

White (2019) notes that from his cultural perspective, according to the Haudenosaunee cosmology, humans have always been in the Anthropocene. The creation of humanity followed

the creation of the rest of the earth, which was in turn created to give humans what they needed and allow them to have a Good Mind, articulated in the choices that humans make. Like Maracle (2015), McKibbin (2019a) and White (2019), these scholars assert that humanity must be seen as part of the natural world, not as having dominion over it, and must live with a Good Mind. White (2019) uses the conceptualization of a Good Mind developed by Rick Hill, who is Tuscarora, in his work, comprised of the following dimensions: (1) humans respecting one another, (2) practicing compassion and kindness, (3) being truthful and consistent, (4) practicing encouragement, (5) taking responsibility, (6) strengthening and supporting one another, (7) working together, (8) self-reflection on actions and decisions made and taken. White's (2019) knowledge of Haudenosaunee cosmology provides a framework for recovering from disaster, processing grief, and repairing social and ecological rifts.

Indigenous knowledges can provide valuable guidance on these fronts because as Nick Estes, a citizen of the Lower Brule Sioux Tribe, explores in his 2019 book *Our History is the Future*, the Anthropocene is hardly the biggest disaster that Indigenous populations have faced over time. *Our History is the Future* (2019) is focused on Indigenous resistance to the Dakota Access Pipeline at Standing Rock, but this struggle is contextualized within an exploration of the long-standing resistance efforts of the Indigenous peoples of the central plains of what is currently referred to as America over time.Estes traces these efforts back to the original devastating colonization of the land by white people, in what the author refers to as a war story.

In the podcast *All My Relations* (2020), Indigenous writers Matika Wilbur from the Swinomish and Tulalip peoples of coastal Washington, and Adrienne Keene, a citizen of the Cherokee Nation, discuss how Indigenous peoples know what brought the forms of structural

oppression and colonization that are contemporarily manifested into their communities. Indigenous peoples are able to imagine other social structures because they have had an understanding of what the world was like before European settlers interjected colonization into their lives. Unfortunately, mainstream scholarship doesn't acknowledge that role of colonization, and to resist oppression requires resistance against historic and ongoing colonialism. As such, Indigenous peoples have awealth of knowledge to share, if this knowledge is centred in the ways that decolonize settler- colonial perspectives. "Sometimes to go forward, we need to return to the beginning (Maracle, 2015, n.p.)". To do so, this begins with honouring the original instructions from Indigenous peoples, Haudenosaunee knowledge (citing Rick Hill) provides guidance: (1) love one another, we are all related; (2) depend on one another for the common good; (3) live in harmony with theearth and be thankful; (4) think of future generations, leave a positive legacy (White, 2019).

As a first step toward reconciliation and a decolonial approach to scholarship and coexistence, settlers need to acknowledge that we primarily reside on unceded Indigenous land, recognize the ongoing nature of colonialism, and recognize that the colonial condition is unacceptable (Maracle, 2015). Sharing of the land must be equitable between settlers and Indigenous peoples, and that the ideas of Indigenous family, citizenship, and governance must be recognized by the broader society and government.

(2) Decolonial Thought and Indigenous Knowledges

"We are also responsible to the natural world. ....We consider the impact of every governmental decision on future generations, on peace - and on the natural world." (Haudenosaunee Wildlife

and Habitat Authority Annual Report 2015)

"If you listen to the four legged, they will teach you" (Elder Marie Jones, Short Hills Harvest, November 2016).

Decolonial thought and Indigenous knowledges are not appropriately recognitized or credited for their contributions in critical animal studies and social work, a phenomenon which is linked to the influence of settler colonialism and white supremacy (Belcourt, 2015). Scholarship in traditionally Eurocentric fields have historically excluded or discredited Indigenous contributions, and despite recent performative efforts of inclusion, decolonialism is not centred in academia (Dekha, 2012). Dayle John (2019) writes, "[…] animal studies have failed to be accountable to urgent interventions from settler colonial studies. These interventions begin with the connection between nonhuman animal and Indigenous genocides interrelated and non- distinguishable theoretically or materially" (p. 48). While critical animal studies is attempting to "re-figure animality outside of speciesist logics" (Belcourt, 2015, p. 9), decolonialism is not central to even these contemporary efforts, and therefore Indigenous perspectives continue to be relegated to the margins. This is problematic for many reasons, not least of all that animals themselves are subjects of colonization as much as Indigenous peoples, and the land that we live on (Dayle John, 2019).

One reason why decolonial thought is consistently relegated to the margins is because the oppression of Indigenous peoples and the violence of settler-colonialism is seen as a part of history, and not a contemporary, ongoing issue. Recognition of the colonialism as a constant, oppressive process that is affecting Indigenous peoples, OTH animals, and the land right now is

essential (Estes, 2019; Swaney, 2019). Kanji (2017) writes, "settler colonialism is imagined as an 'event' that has already happened in the past, rather than a 'structure' that is continuously and actively reconstituted in the present."

In this section of my dissertation, I will explore decolonial thought and Indigenous knowledges as they have affected my scholarship and influenced this study. Of all the areas of knowledge that I incorporated into my dissertation; this scholarly field is the one that is the least familiar to me. While it feels vital and necessary as a perspective to focus on in order to attempt to reconcile my own scholarship with its colonial past and present, I am far from an expert in this field. It was unfortunately not within the scope of this study to develop the partnerships with Indigenous knowledge keepers that would be required of myself as a white, non-Indigenous researcher to understand the details of a specific Indigenous worldview and work within that to develop this project. Instead, through reading widely and finding commonalities between how various Indigenous scholars around the globe are engaging with critical animal studies and human-animal bond, I hoped to build a foundational understanding of a broad decolonial approach to critical animal scholarship, from my position within the social work field. It is with this general understanding that I have approached this study, in order that more diligent work may be done in the future, ideally with Indigenous knowledge keepers at the helm.

(2, i) Appropriation and Solidarity Work

One of my biggest concerns in studying Indigenous knowledges as a white, colonial scholar has been cultural appropriation. I am grateful to have been supervised by Dr. Bonnie Freeman, an Algonquin/Mohawk scholar from the Six Nations of the Grand River territory, who

was able to offer her guidance at various stages throughout this study. Her knowledge has contributed to my ability to be aware of the extent to which Indigenous perspectives continue to be marginalized in the fields in which I work. However, the Indigenous knowledges shared with me through this Eurocentric process we call "research" and explored in this section of my dissertation are not my own. I am a white scholar, originally raised in the territory of the Beothuk people, who were killed in a genocide on their own land. My ancestral roots can be traced matrilineally through seven generations of history living on and farming Beothuk land. I have no knowledge of any reparations that have been undertaken by my biological family for this colonial process, and older generations of my family continue to inhabit and profit from this territory. I currently live in North York, Ontario, and the land where much of this dissertation was written is the territory of the Huron-Wendat, the Missisaugas of the Credit First Nation, the Haudenosaunee, and the Anishinaabe peoples.

Tommy Pico (2017), an Indigenous writer originally from the Viejas Indian reservation of the Kumeyaay nation who now splits his time between Los Angeles and Brooklyn points out throughout his work in *Nature Poem* that the relationship between Indigenous peoples and nature has been complicated through colonial processes. In social work, even as a white student I have experienced how Indigenous topics and work about nature and OTH animals are often complicated, if not conflated. I was assigned an Indigenous supervisor for my doctoral work in part because I write about OTH animals. This is not the first time that this has happened to me – Indigenous topicss and other anti-anthropocentric topics are frequently grouped together at social work conferences, in panel discussions, and in thematic academic publications as well. Indigeneity and a connection to nature are seen as similar, through a racist colonial lens, as Pico (2017) explores. Yet as a white settler researcher, I deeply value the experience of what I have

been given permission to learn in this program and through Dr. Freeman's mentorship. While I endeavour not to reify colonial norms in my work, that doesn't mean that the issue is not complicated. Pico (2017) writes that the traditional function of Indigenous peoples in literature are as metaphor. This was an effective reminder that while I am trying to learn from Indigenous knowledges on animals, the scholars behind the work can't be seen as symbolic for a moment, because there is the material reality of colonialism attached to our lives.With all my intentions with this study, it is undeniable that the lived realities of colonialism are constantly perpetuated through my field of social work, including through social work involving OTH animals.

Fawcett and Johnson (2019) cite Lynn Gehl's work on Indigenous allyship in their work. Gehl is an Algonquin Anishinaabe scholar, and they state that "Gehl advocates for, among other things: constant critical reflection, thoughtful listening, positioning oneself as a researcher, staying attentive to subjectivity, and actively working to gage if an individual or group's actions are working to address a need as expressed by the community" (p. 179). I hope that by making a concerted effort to integrate decolonial approaches to my project from start to finish, I have been the best ally I can be within my current social context.

In November of 2015, I became involved in the Supporters of the Haudenosaunee Right to Hunt and had the opportunity to engage with solidarity activism that became a huge part of the learning experience that I engaged with during this program. The Indigenous deer harvest at Short Hills Provincial Park happens every year in Ontario, and the issues surrounding it are incredibly complex. They are beyond the scope of this dissertation to explore in depth, although I have done so in other publications (Legge and Taha, 2017). My involvement in the movement to support Indigenous deer hunters was a conscious embodiment of my value for intersectionality with regards to social justice, specifically where animal and ecologically

oriented activism is concerned.

The Supporters of the Haudenosaunee Right to Hunt (n. d.) state, "Haudenosaunee harvesters have legal treaty rights to hunt at Short Hills Provincial Park and, for the past 5 years, have held an annual harvest of white-tailed deer. However, approximately 25 local community members oppose this treaty right and have put up a physical barricade blocking Haudenosaunee hunters from having direct access into, and out of, the park." My role in 2015 was as a part of a group of activists who came to the park to demonstrate solidarity with Indigenous hunters and opposition of the anti-Indigenous blockade that was maintained by community members who positioned themselves as vegan and animal liberation activists.

Non-Indigenous scholars Donaldson and Kymlicka (2011) write, "Is it not a form of Eurocentrism and moral imperialism to impose 'our' views of the rights of animals on other societies?" (p. 44). This was the question paramount in my mind when I chose to engage in solidarity activism at Short Hills. I have been vegan since I was 11 years old and been involved in animal liberation activism for as long as I can remember. Some of my earliest memories are of crying, as a child, when I passed trucks full of chickens destined to slaughter in the factory that was on the edge of the first neighbourhood that I remember living in. As is appropriate, my understanding of human-animal relationships and ethics became more nuanced as I grew older, but still, it was difficult for me when I first encountered the notion that as a white colonizer, I did not have the right to impose my Eurocentric views of animal ethics on the disenfranchised Indigenous populations on the land that we share. Even a few years before I was engaged in this experience, it would have been impossible for me to reconcile my personal values about OTH animals' right to live with standing in solidarity with Indigenous peoples and supporting their right to harvest deer.

Haraway's call to "rethink approaches that definitively mark nonhuman animals as either killable or not" (Corman, 2012, p. 306) was resonant with my experiences as a vegan in the context of this action. While provocative within animal liberation activism, troubling this duality was incredibly important to my analysis of my own involvement in the demonstrations at Short Hills.

The Short Hills demonstrations supporting Indigenous inherent rights to hunt were a surreal experience. The Supporters were at the park at least every twelve hours every day that the harvest occurred, for four to five hours at a time. We would stand in the wind, rain, and dark, threatened and assaulted by law enforcement officers as well as hunt protestors. In between the demonstrations, we would eat, sleep, and tend to the fire. Because I was writing my comprehensive exams during this time, I would read parts of Derrida (2008) when I wasn't walking the dogs of other supporters in the woods behind the house where we all stayed, working on social media campaigns, organizing radio interviews, shuttling food provided by the local branch of Food Not Bombs to and from the park, or driving to the Niagara Regional Native Centre to get wood and traditional medicines for the fire. I was told stories about the history of Indigenous activism in the area, and what the deer harvest means in the traditions and culture of the Haudenosaunee. I was taught that the drums that had been brought to Short Hills were made of deer hide, and that without the harvest,making the drums would not be possible.

I was privileged to be included in morning ceremonies led by local Indigenous Elder Marie Jones as the sun rose over the vineyards and the forest. I learned about the meaning of the traditional fire, and what the experience of being a firekeeper can be like for those entrusted with the responsibility. I was humbled to be invited to smudge, to sing, and to drum with the Indigenous women and their friends. In this way, the deer themselves were ever-present, because

the drums that formed the central beat of our song were handmade from their stretched hides. The Indigenous women who I spoke to during these experiences believed that the deer sacrificed their bodies so that the children of their families could survive, and they honoured those sacrifices by using every part of the deer's body, so that nothing was wasted. We could not have made the music that we did without this sacrifice. When we sang, we got messages from the hunters inside the park that they could hear our songs, and it made both them and the deer calm.

As a non-Indigenous person, I am not in a position to evaluate the ethical value of the hunt. Nadasdy (2016), who I understand to be a non-Indigenous scholar, writes that the moral exceptionalism granted to Indigenous hunters who engage in the hunting of OTH animals by some scholars and activists extends only insofar as Indigenous hunting is viewed through a Eurocentric lens as a survival necessity. In the context of my own involvement at Short Hills, I saw and continue to see myself only as a supporter of the Indigenous peoples of the region, and their interests with their rights on treaty land, regardless of any other factors.

Throughout the demonstrations, the Indigenous women involved reminded all of the Supportersthat we should be of a Good Mind. The Good Mind was more thoroughly explored earlier in this chapter, but it was through my activism at Short Hills that I first encountered the concept. It was something that I initially struggled with, since much of my activism experience to that point had been confrontational in nature. It was a slow learning process for me to be able to work alongside the Indigenous leaders of the movement and maintain positivity and optimism in what felt like an antagonistic environment. Still, the demonstrations were described by Indigenous supporters of the right to hunt as "reconciliation in action." After all of these powerful experiences, I was eager to dig my teeth into the decolonial thought that I had chosen and to explore on an intellectual level some of

the ideas that I had encountered on the ground at Short Hills.

(3) Posthumanism

(3, i) Critical Animal Studies and Social Work

"Critical animal studies is based on the conviction that our ideas of social justice should be applied to other animals, not just to members of our own species" (Sorenson, 2014, p. xx).

Critical animal studies map well onto social work in part due to the practical nature of the field. Sorenson (2014) explains the necessity of action in critical animal studies, sometimes embodied through the disruptive direct action, civil disobedience, or educational initiatives. Like many diverse theories for social work practice, critical theories about OTH animals do not accomplish anything if they remain isolated in the realm of scholarly thought. Sorenson (2014) makes explicit that critical animal studies aligns itself explicitly with the animal rights movement, which differentiates it from some veins of postmodern and posthuman animal studies. Using the work of Donna Haraway as an example, Sorenson (2014) states, "Deliberately vague and apolitical, postmodern animal studies avoids any direct commitment to animals or to serious criticism of their exploitation" (p. xix). Haraway's work is significant in the field of posthumanism, and I believe that critical and postmodern theories are not necessarily incompatible, however different they may be (Pease and Fook, 1999). It is necessary to work with the notion that both theoretical conceptualizations between humans and animals in society are inherently useful, and also inherently flawed. The tension between them is rich in terms of its potentiality for usefulness.

(3, ii) Decolonizing Critical Animal Studies

A proportionately large quantity of the extant decolonial scholarly literature that speaks to the field of critical animal studies from an Indigenous perspective is a response to a book by Donaldson and Kymlicka (2000), entitled *Zoopolis*. *Zoopolis* is a Canadian political theory agenda that proposes the application of the group-differentiated citizenship framework to "political animals". Heralded as ground-breaking when it was published, this text was formative for many Millennial scholars with interests in radical, critical animal studies. Certainly, upon my first encounter with this particular text, it opened my mind to possibilities of animal subjectivity that I hadn't previously considered. Yet, the subjectivity suggested in Eurowestern theorizations of animals has severe limitations. Billy-Ray Belcourt (2015), originally from the Driftpile Cree Nation, writes that in order to be socially just, new theoretical frameworks should attempt to dismantle oppressive power structures, including those embedded within colonialism, like anthropocentrism, white supremacy, and neoliberalism. Scholars, including Belcourt, expound deep criticism of *Zoopolis* for its violent imposition of settler colonial institutions and values considered normative within Canadian political structures onto OTH populations (Belcourt, 2015; Fawcett and Johnson, 2019; Geroux, 2019; Kanji, 2017; Nasady, 2016).

There is an often unmarked Euro-American focus in animal studies and identify that there is an explicit desire developing to decentralize the influence of privilege on the field, not only in terms of decolonizing sites of knowledge production, but also in terms of moving away from privileged subjects of study as well (Livingston and Puar, 2011; Zahara and Hird, 2015). Julie Livingston, a non-Indigenous American medical historian, and Jasbir Puar, a Palestinian-

American queer woman of colour (2011), write that a shift in focus away from privileged species "impels our attention not only to compassionate critters, but also, significantly, 'incompassionate' pets, microscopic viruses, and commodified plants – in other words, forms of life with which interspecies relating may not be so obvious or comfortable" (p. 5). Alexander Zahara and Mira Hird, two settler scholars in Canada with an interest in decolonial thought, note that analyzing the ways in which we navigate interspecies relationships with these "unpopular" species, or don't, offers insight into the ways that conflicting Eurowestern and Indigenous knowledge co-exist, ordon't (Zahara and Hird, 2015). Hird, quoted by Cuban-American scholar José Esteban Muñoz (2015), identifies some of these incompassionatecreatures, specifically bacteria, as not only our ancestors but also as constitutive of us. She writes, "[…] we remain utterly dependent on these ancestors who not only created us but now also sustain our environments" (Muñoz, 2015, p. 213-14). This is congruent with the relational perspective described above, but also with a notion of posthuman subjects as composite beings.

Diné scholar Kelsey Dayle John (2019) notes that the obvious progression would be intentional decolonization of animal studies, which would mean handing off the project to Indigenous peoples and their kin. Maracle (2015) asserts this in her work as well, noting that in order to imagine what solutions tothe problems of colonialism might be, Indigenous peoples need spaces to dream, free of the riskof non-Indigenous interference. Thohahoken Michael Doxtater (2004), from the Six Nations of the Grand River, writes that one of the reasons why this is essential is because Indigenous knowledges cannot and should not be evaluated by the same standards as Eurowestern scholarships. One way that Indigenous knowledges have resisted andsurvived over time is by addressing Indigenous development from within an Indigenous framework, not needing to necessarily engage with Eurowestern frameworks at all.

McKibbin (2019a) outlines some of the reasons why Indigenous peoples are perfectly positioned for leadership positions when it comes to ecological and OTH animal care and advocacy: (1) they understand the importance of living in harmony with the natural world; (2) they are sensitive to issues of power; (3) they have the ability to realize grassroots change, which can move outwardsto bigger communities, or inward, to families.

Given equitable conditions, Maracle (2015) asserts that Indigenous peoples could make positive progress in society and on earth, and collaboration could ultimately be possible if space were made for knowledges outside of Eurowestern institutions. It is time to let these institutions go and focus on the knowledges that could ultimately be healing (Maracle, 2015). Unfortunately, given my positionality as a student within the academy, it is not within my capacity to bring this structural change about immediately. As an incremental praxis, I have attempted to centre decolonial thought and Indigenous knowledges within my work.

One of the ways that I have attempted to integrate decolonial thought into my praxis is by respecting the notion forwarded by many Indigenous cosmologies that animals are, themselves, "knowers" (John Dayle, 2019). This belief is very congruent with my approach to research, and central to my decision to utilize emergent technologies to gather partial perspectives from the animals involved in the research themselves, rather than relying solely on human mediators. Armstrong (2002) writes, "Encountering the postcolonial animal means learning to listen to the voices of all kinds of 'other' without either ventriloquizing them or assigning to them accepts so foreign that they never can be understood" (p. 417). While the Eurocentric norm is to draw kinship lines based on blood lineage and along colonial legal lines, Indigenous peoples often include OTH animals in their kinship bonds (Gutiérrez, 1994). Failing the ability to do that within academic structures that shape this project, I have attempted to centre Indigenous

knowledges from Turtle Island and around the world in my own work, while acknowledging that this is not enough. Belcourt (2015) writes that Eurocentric perspectives are "always and only colonizing gestures that disrupt decolonial futurities precisely because a critique of the settler subject position in relation to animals has yet to be forwarded" (p. 9-10). This perspective is echoed by other Indigenous scholars (list the Indigenous scholars), including Kanji (2017) and Maracle (2015). Indigenous voices are seldom, if ever, heard or sought out in the broad field of animal-assisted interventions in social work, and this is an absolute necessity for sustainable decolonial futurity. As a white colonizer scholar learning about decolonial theories, I have made every effort to focus my study of decolonial perspectives on Indigenous voices, and to honour their knowledges and approaches, in order to avoid reproducing problematic patterns of colonialism and cultural imperialism already prevalent in the field.

(3, iii) Posthumanist Theories

Posthumanism, according to Braidotti (2013), "introduces a qualitative shift in our thinking about what exactly is the basic unit of common reference for our species, our polity, and our relationship to other inhabitants of this planet" (p. 1-2). This framework has become widespread within the social sciences and humanities, and despite its Eurocentric roots, is intellectually congruent with Indigenous knowledges in that they both start from an anti-anthropocentric point of departure. As an example, Hobbs invokes his dog in part to highlight that dog life is not an "unfathomable abyss," rather that posthumanism despite its ivory tower origins is moving toward an embodied praxis and should be understood as such: "[…] my dog draws me into an embodied way of knowing […] in which she gnaws on my flesh and bones,

softening their rigidity, helping me realize that my flesh and bones are never solely human" (2016, p. 177). While there are various posthumanist perspectives, what they have in common is that they "criticize human-centred (anthropocentric) ways of understanding life and reality" (Roden, 2015, p. 10). There are two primary tensions that exist around posthumanism as a philosophical perspective. First, that there is little if any challenge to the "human" as a discreet category of subject, and this category seems to be a starting point for much of the posthuman theorizing within the body of literature that I explored. The second critique is one that has also been leveraged against queer theory and theories within critical animal studies, which alone is theorizing without applying the theory and is inadequate (Corman, 2012; Penney, 2014; Sorenson, 2014; Mathews, 2015).

Hobbs (2016), notes that queer theory is congruent with Indigenous knowledges and that both perspectives have been relegated to the bestial and marginalized by the academy. Giffney and Hird (2008)'s volume, *Queering the Non/Human*, explores the intersection between queer and posthumanist theories. The starting point for Giffney and Hird's (2008) inquiry is Jeffrey J. Cohen's challenges to anthropocentrism and humanism. With reference to Cohen, they state, "For him, 'The body is not human (or at least, it is not only human)'; neither he insists, 'is it inhabited by an identity or sexuality that is unique to or even contained fully within the flesh'" (p. 6). The volume interrogates the notion of what behaviours, bodies, and identities qualify as "normatively human", and "what might constitute nonhuman, posthuman, subhuman, transhuman, superhuman and inhuman perspectives, and discuss moreover how these terms intersect with and diverge from the monstrous, the Other, the abject and the barbarous" (p. 8). While it is beyond the scope of this chapter to fully unpack all of these ideas here, it merits future attention, as they are all consistently neglected in social work theorizing. For the purposes of this

study, I focused on the aspects of posthuman theories that are expanded upon in the following sections. First, I engage with posthumanism to the limited extent that alternate conceptions of the subject, and the deconstruction of the notion of the human as the only legitimate subject, are useful and relevant in conducting research involving OTH animals and attempting to do so in a way that does not reinforce anthropocentric norms. This is the primary focus of the sections on non-human animal subjectivity (iv) and composite beings (vi). Additionally, using digital scholarship in my research means involving another OTH element that necessarily interacts with both human and OTH animals: technology. In this way I also engage with posthumanism, particularly the ideas of cyborg theory (v), relationality (vii), and situatedness (viii), in this project.

The work of Giffney and Hird (2008) and their contributors is invaluable to the project of deconstructing the discourse of anthropocentrism and envisioning what a reconstruction of the field of social work might look like after the fact. Giffney and Hird (2008) explore change as "an enfolding from which we as 'agents' are inextricable" (p. 12). What I hope to accomplish with my doctoral research is ultimately to have a deeper understanding of what social workers' roles as agents in this may be, and how we can best perform these roles to achieve positive social change. Giffney and Hird (2008) write that the project of posthumanism is to "critique normative anthropocentrism" (p. 3). Posthumanism can therefore be framed as an extension of critical theories and postmodernism, however if only because of its focus specifically on disrupting anthropocentric discourses, it remains central to my academic longings (Clarke, 2004).

The process of co-construction of subjects and deconstruction of individuals in the process is essential to the development of a conflict-based interdependent space where subjects

can thrive in the tension of negotiating difference. Although obviously relationships between humans are essential to this process of co-construction and deconstruction, and the basic importance of these concepts is more nuanced between human relationships, whereas other subjects are often neglected if not ignored completely despite the impactful role they often play. As far back as Levinson (1962), the roles that OTH animals who participate in AAI have been identified as: companion, friend, servant, admirer, confidante, toy, team-mate, slave, scapegoat, mirror, trustee, and defender, some of which are roles that are traditionally occupied only by other humans. It seems to me that if for so long we have documented that OTH animals play these roles in the lives of humans, it may be truly through these relationships that our humanity comes undone. Haraway (2003) writes, "Species is about defining difference" (p. 15). If we are unable to pinpoint the differences between the roles that OTH animals and humans can play in human lives, and it is through relationships that our identities are co-constructed, these differences between species seem to melt away. The foundational aspects of the discreet human identity that, in Eurowestern culture, have been used to strengthen oppressive anthropocentric hierarches, no longer hold up. There is little that can be said about what makes humans different from OTH subjects if we can accept that we are constructed in relationship to each other, and the roles that we play in each other's lives are not unique to our species. In an effort to decolonize the notion of species, we can look to Indigenous knowledges for alternative ways of conceptualizing our relative identities.

Naisargi (2014) deconstructs his own binary thinking about species membership, writing that he may be locked in a closed logic of representation in which humans and other animals are either the same, or they are not. Through this discussion, Naisargi (2014) articulates what I see as the primary debate at the root of the posthumanist perspectives. Naisargi (2014) writes about an

animal rights activist called Satija, who talked about "becoming" an animal, as opposed to "being" an animal. This fluidity of identity, Naisargi (2014) admits, may have the potential to disrupt, rather than reproduce, anthropocentric humanism. In this way, As Indigenous knowledges demonstrate, humans are capable of, and indeed must, envision identity as ever-changing as opposed to static, accept that we are always being co-constructed and deconstructed in relationship with each other and other subjects. If we take this on, we inevitably acknowledge that species and other identity categories are not as capable of containing us as we may have once believed.

Trans theories are also beginning to find some overlap with other theoretical frameworks discussed in their innovative new area of *Tranimalities*. The *Transgender Studies Quarterly* (TSQ), out of Duke University Press, issued a call for papers on the topic of tranimalities in June of 2014. It offers the following explanation of the concept; "*Tranimalities* wishes to focus on trans-infused apprehensions and engagements with the expansive world of possibility opened up by non-anthropocentric and posthumanist perspectives. In this way, *Tranimalities* aims to entangle and enmesh trans and the nonhuman in a generative tension leading to alternate ways of envisioning futures of embodiment, aesthetics, bio-politics, climates, and ethics" (n.p.).

The most impactful selection from this issue of TSQ from the perspective of this study was Colebrook (2015)'s *What Is It Like to Be a Human?*, whose perspective is very compatible with the Indigenous knowledges explored in this chapter. Colebrook (2015) critiques some of the seminal theorists behind contemporary critical animal studies perspectives, Agamben, Derrida, and Deleuze and Guattari. These theorists, who have heavily influenced this project, all deconstruct the human/animal binary by first deconstructing the concept of the "man": "[…] it is man who overcomes his miserable bourgeois self-enclosure through an experience of animal

alterity […]" (p. 230). What trans theories have to offer here is the identification that this is a limited, gendered starting point. Thankfully, these perspectives have been expanded upon by 20th century theorists; however, who is the point of reference for these seminal thinkers is a privileged subject along many axes, which begs the question, for which people is this animal alterity accessible or desirable, and whom is it forced upon? Colebrook (2015) responds to my inquiry with what I would call a logical yet radical suggestion for the field, "First, all modes of recognition presuppose a norm of human likeness and species solidarity; rather than expand this range of human inclusiveness (that relies on differentiation), we might think of attributing political and ethical worth to those with whom we feel neither solidarity nor significant difference" (p. 227).

While there are various posthumanist perspectives, including transhumanism, critical posthumanism, and speculative posthumanism (Roden, 2015), the reason that posthumanism broadly became a central theme in this project is because all of these philosophical perspectives have in common is that they "criticize human-centred (anthropocentric) ways of understanding life and reality" (Roden, 2015, p. 10). In this dissertation, I have attempted to de-centre the human "in relation to other animals, but also in relation to other possible and potential entities" (Brown, 2015, p. 326).

The three types of posthumanism are distinct. Transhumanism involves theorization of the notion of cyborgism, or an enhanced humanism, optimized by way of scientific advancement through nanotechnology, biotechnology, information technology, and cognitive science (Roden, 2015). I found some theoretical parallels between this perspective and the idea of optimization in contemporary molecular biopolitical regimes (Rose, 2007), which can again find parallels with Foucault's earlier techniques of the self (Foucault, 1994), as well as Renaissance ideals of self-

fashioning (Roden, 2015). Critical posthumanism, on the other hand, takes as its central task the deconstruction of the human/non-human binary. This perspective is critical of transhumanism, characterizing it as "hyper-humanism," rather than a genuine challenge to anthropocentrism (Roden, 2015). Conversely, transhumanists note that critical posthumanism is a perspective which can overlook the reality that "posthuman succession might result in posthumans" (Roden, 2015, p. 25). Finally, speculative posthumanism “opposes human-centric thinking about the long-run implications of modern technology” (Roden, 2015, p. 21).

There are two primary tensions that exist around posthumanism as a philosophical perspective and a theme within my project of challenging anthropocentrism. First, the “posthuman is always already constructed with the "human" as a discreet category of subject as a reference point. The second critique is one that has also been leveraged against queer theory and theories within critical animal studies, which is that theorizing alone, without operationalizing of the theories, is inadequate (Corman, 2012; Penney, 2014; Sorenson, 2014; Mathews, 2015). There is necessity within all these theoretical frameworks for a move beyond the rhetorical and into action.

Despite limitations, posthumanism remains pertinent and congruent with my project, and relevant to contemporary social work theory. Roden (2015) states that Claire Colebrook along with Rosi Braidotti, both scholars in posthuman theory, claim "that a liberal politics oriented towards the rights and welfare of humans is incapable of addressing issues such as climate change or ecological depletion in the so-called 'Anthropocene' epoch, in which humans 'have become a geological force capable of affecting all life on this planet'" (Roden, 2015, p. 28-29). Given the political context in which this research project was developed, and my personal value around interdependence, it was necessary for the relevance of my dissertation to attempt to de-

centre the human. I have therefore involved OTH participants and their perspectives as fully as possible, but I have also gone beyond this through use of digital scholarship techniques, using sensors to integrate data about the surrounding environment that impacts all of the participants in the study as well.

Given that in many Indigenous knowledges, humans are not the only figures considered subjects, I wondered why that was not the case in Eurowestern theorizing. In order to decolonize my engagement with posthumanism, I chose to explore the notion of the subject more broadly, in an attempt to deconstruct the idea of the human as the only legitimate subject of this study.

(3, iv) Non-Human Animal Subjectivity

Greek philosopher and scientist Aristotle is enormously influential with regards to Eurowestern thought, and development of politics (Corman, 2012). Birke and Parisi (1999) identify that Aristotle wrote about species categories and described them as discreet and fixed. Building on Plato's philosophical devaluation of the natural world, Aristotle expanded the notion of hierarchies and exclusion, particularly through his theory of the soul (Hall, 2011). Aristotle theorized that there were three levels of soul: nutritive, sensitive, and intellectual. Because he stated that reason results in happiness, the highest human good, the intellectual level of the soul was the most important, and not all beings possess this level of soul (Hall, 2011). Corman (2012) notes that Aristotle's work was predicated on an "ideological cleavage of humanity from the rest of animal kind," (p. 167) based on perceived capacity for speech, voice, and language, and therefore participation in political life (p. 167). Aristotle used this rationale to justify the solely utilitarian value of non-humans. Hall (2011) states, "In order to claim them solely as instruments

for human use, Aristotle violates the autonomy of plants and animals, indeed strips them of any autonomy or subjectivity" (p. 25). Because of the pervasive influence of this historical production, it has always been controversial to apply notions of selfhood or consciousness to animals (Agamben, 2004; Smuts, 2001). Contemporarily, this perspective has been heavily contested among activists and academics alike. Irigaray (2008) writes that “a subject cannot be confused with a tool at the disposal of one who would like to use it” (p. 82). The problematic nature of the power that language has taken on in the conceptualizing of the subject is also identified by disability scholars, who identify that disabled humans and animals have been conflated in many cultural and historical contexts, and that their abilities and inabilities have also been conflated, which has had troubling and oppressive results on both sides (Oliver, 2016; Taylor, 2017). Why has language accrued such power, and why does normative society look down on the ways that disabled people and OTH animals communicate and assume that the differences we observe from what is normalized among Eurocentric scholars are morally consequential? When we listen to animals, like oppressed humans, they tell us things that are difficult to hear. Is this why we choose to speak over both of them, offering them our voices, rather than listening to what they have to say? As Arundhati Roy famously said in her 2004 Sydney Peace Prize lecture, “There's really no such thing as the 'voiceless'. There are only the deliberately silenced, or the preferably unheard.”

Many alternative theorizations of the categorical distinctions between humans and non-humans have existed both historically and contemporarily. Derrida (2008) notes that within contemporary Eurocentric philosophy, human subjectivity has always been dependent on “his subjugating superiority over the animal, his very becoming-subject, his historicity, his emergence out of nature, his sociality, his access to knowledge and technics, all that” (p. 45). However,

Berger (1991) writes, "[...] to suppose that animals first entered the human imagination as meat or leather or horn is to project a 19th century attitude backwards across the millennia - animals first entered the imagination as messengers and promises" (p. 2). One example of early "imagining" around animals is based in Indigenous epistemologies. For many Indigenous populations in what is currently known as Canada, part of Turtle Island, OTH animals are part of kinship systems and considered as sources of wisdom, and they have both ceremonial and historical importance (Harrod, 2000; Hogan et al., 1999; Hornborg, 2013). Bradshaw (2010) notes that prior to contact with Europeans, Indigenous people lived "shoulder to shoulder" with animals. Indigenous oral traditions portray other animals as thinking, talking, and living much as human animals do. This view of OTH animals is not anthropomorphism. Indigenous views posit that personhood is an experience common to all forms of life (Hornborg, 2013). The idea of a non-anthropocentric personhood is congruent with the posthuman perspective, and challenges the Enlightenment construct of humanity (Braidotti, 2013). However, this perspective is incongruent with the modernist project of the 19th century, a project where social work finds its roots, and to which even contemporary social work has allegiance. I would speculate that it is in part due to these roots and this allegiance that social work theory has favoured Eurocentric theoretical frameworks over others, despite the influence of critical race and anti-oppressive theories as well as a recent push toward indigenization and decolonization of social work and related education contemporarily.

Posthumanist theorists also make an attempt at alternate "imaginings" about OTH subjectivity. Braidotti (2013) makes an important distinction, which is that the posthuman subject is not necessarily a postmodern or post-structuralist subject. The posthuman subject does have some consistent characteristics, including that it is: "materialist and vitalist," "embodied

and embedded," multifaceted, relational, monistic, feminist, and post-colonial (p. 188). Corman (2012) adds "phenomenologically inspired, non-unitary, and often, in a perpetual state of becoming" (p. 152).

The idea of moving "beyond" – beyond "the human", primarily – were explored across several of the pieces in Muñoz' (2015) dossier, *Theorizing Queer Inhumanisms*, which contained many articles that offered decolonial perspectives, useful connections to subjects discussed earlier in this chapter. The primary question considered regarding moving beyond the human was posed by Jackson, who demands of posthuman scholars, "What and crucially whose conception of humanity are we moving beyond?" (Muñoz, 2015, p. 215). Haritaworn asks a comparable question, which is, "For whom might identifying with the nonhuman be too risky a move?" (in Muñoz, 2015, p. 212). Both questions, in a style similar to Powell (2014), highlight the contradictions that come with posthuman theorizing. While it is a paradigm shift intended to be emancipatory, it quickly takes an oppressive turn when it lacks consideration of decolonial perspectives. I have attempted to address this limitation of posthumanism in this project by centring, rather than casting aside, decolonial theories and Indigenous knowledges. It is essential to recognize that long before Eurowestern thought had begun to consider posthumanism, it is in Indigenous thinking that these ideas originated.

(3, v) Cyborg Theory

So far, I have looked at two different kinds of non-human figures that can be theorized as subjects under posthumanism: non-human animals, and technological subjects. However, I align myself philosophically with posthumanist and queer perspectives, and thus it is necessary not

only to consider discreet categories of potential subjects, but also to deconstruct these categories and look at the ways that various kinds of subjectivity overlap. This is becoming more necessary over time, particularly under contemporary biopolitical regimes. In her discussion on sociable robots, Turkle (2012) posits that we not only think of machines as more human over time, but of humans as more machine; she states, "With psychopharmacology, we approach the mind as a bioengineerable machine" (p. 50). Rodney Brooks concurs, comparing humans' biochemical "programming" for emotions to robots' algorithmic programming (Turkle, 2012). In this section, I blur the boundaries between animal subjects and technological subjects through an exploration of cyborgism, and in the section that follows (V, iv), I draw on molecular biopolitics to probe the idea of composite beings, and question whether discreet categories of subject are at all necessary – or even viable – under posthumanism.

In the key works that I explored, technology was theorized in three ways: as something that can be incorporated into human subjectivity in the sense of optimization or hybridity (Rose, 2007; Turkle, 2012), which has been framed by some as the next step in the evolution of humanity (Harris, 2011; Brown 2015); as prosthesis, or extensions of the human (Haraway, 2008; Pick, 2011; Roden, 2015); and finally, as a mediator between relationships or an environment in which interactions occur (Rushkoff, 2011; Turkle, 2012). In this section on cyborgism, I will discuss the first theme identified above, and the other themes will be discussed later in this paper.

Livingston and Puar (2011) identify in their work that there is a productive tension to be found between critical animal studies and posthumanism. One of the places where this tension is to be found is in the notion of corporeality. Interestingly, both Pick (2011) and Livingston and Puar (2011) write that posthumanism moves away from a focus on corporeality or embodiment.

Pick (2011) argues that considering physical bodies is moving away from posthumanism, while Livingston and Puar (2011) describe posthumanism as seeking "to destabilize the centrality of human bodies and their purported organic boundedness, foregrounding the technological productions of bodies and the indeterminate and often unacknowledged co-development of consciousness, tools, bodies, and culture" (p. 4). Aligning myself with Roden (2015) and a broadly anti-anthropocentric definition of posthumanist thought, I tend to disagree that posthumanism neglects the question of the body – rather, posthumanism tends to consider the body in a different way. In posthumanism, particularly transhumanism, the body has a broader potential to be theorized variously, and one of these ways is as a site of technological or biological hybridity, colloquially referred to as cyborgism.

As I noted above, Harris (2011) and Brown (2015) describe cyborgism as a next step in evolution. Rose (2007), however, argues that, being that humans have always integrated technology in a variety of forms throughout history, as a species we have never existed in a purely "natural" state, rather, we have an unacknowledged cyborg heritage. In the article "Auxiliary Organs" from Miller and Matviyenko (2014), Srnicek writes, "[...] cognition is not bound by our bodily exterior (and, in particular, not bound to our brain)" (p. 73). This is a description of the extended mind hypothesis, which is a theory of cyborgism that proposes that the capacity of the mind has always been enabled through assistive technologies of two types: tactile (i.e., abacus) and external (i.e., using pen and paper to figure out the solution to a problem) representations.

The extended mind theory and the definition of OTH animals, and in particular of service dogs, as "tools" (Taylor, 2017; Oliver, 2016) led me to wonder where OTH animals would fall into these categories. It's probably a little less concrete than using a calculator, but if we

acknowledge that our physical interactions with other objects (including bodies) are part of our human cognitive landscape, it stands that our interactions and communications with animals would be part of our extended minds.

(3, vi) Composite Beings

According to Braun (2007), Nikolas Rose's conceptualization of molecular biopolitics is based on Foucault's earlier theorizations. Foucault's interpretation of the biopolitical became disarticulated from the notion of the sovereign in his later work, and in the 1970's, his model of biopower became more destabilized (Wolfe, 2014). The mechanisms through which biopower operates shifted from laws and sanctions to norms addressed to the physical body, and this interrupted the ontological perspective that any political subject is a legal subject first, rather suggesting that every subject is fundamentally somatic (Wolfe, 2014). This is congruent with Pick's (2011) notion of embodiment as a creaturely quality. At this point, the body itself was defined by its base material: *carne*, or flesh (Esposito, 2011). Using this interpretation of the body, Indigenous academic Gutiérrez (1994) noted that the physical body can stand as a metaphor for essentially any bounded system.

However, since the improvement of visualization technology in the 1930's, the body, and likewise the rest of life, is subject to molecularization (Rose, 2007). We now know that genetically, 90% of all our cells are non-human (Haraway, 2008). As Haraway (2008) writes, "I am vastly outnumbered by my tiny companions" (p. 4). In this way, interconnectedness is actually corporeally constitutive. Definitively and scientifically, our individuality is artificially, and socially, constructed. Haraway (2008) references Gilbert when she notes that in fact, because of embryonic co-creation of bodies, no one is ever purely individual. This perspective is congruent with queer, trans, and Indigenous scholarly contributions that, for decades, have

challenged the notion of the body as an immutable, individual structure (Gutiérrez, 1994).

More than a scientific advancement, molecularization has become a social phenomenon, explained by Raman and Tutton (2010) as "the impact of genetic science on institutions, societies, and individuals" (p. 712). Under molecularization, the elements of human life become removed from specific affinities, including affinity to any individual body, allowing a new mobility of vitality (Rose, 2007). While new to humans, this mobility of vitality is not novel, as is demonstrated by a long history of plant collection and breeding. At this point, we can no longer naïvely view the body as "molar", that is, at the scale of "limbs, organs, tissues, flows of blood, hormones, and so forth" (Rose, 2007, p. 11).

In theorizing the subject, we are forced to face the reality of a non-unitary corporeality – humans, as all other creatures, are composite beings. Brown (2015) writes that "the body can be understood as porous and not discretely bounded," and draws on science fiction author H. G. Wells, who referred to bodies as "cell communities" (p. 326). Livingston and Puar (2011) cite Cohen, who writes that there are "multiple species that compose anybody" (p. 11). In the contemporary biopolitical context, therefore, it is difficult to accept the notion of distinct and unified species, or support the human/animal duality, and this "challenges our notion of individuality and sovereignty" (Brown, 2015, p. 326). Gibson-Graham and Miller (2015) write that we must "cease to think of ourselves as singular, self-contained beings, and begin to think alongside, for example, the multiple communities of bacteria and bacterial symbiants from which we continually take shape, and of which we are but fleeting, temporary manifestations" (p. 10). With regards to my own work, Haraway (2003) notes that in our relationships with dogs, the particles that constitute us combine with those of our dog through things like saliva exchange over time: "Dogs are not an alibi for other themes; dogs are fleshly material-semiotic presences

in the body of technoscience. Dogs are not surrogates for theory; they are not just here to think with. They are here to live with" (Haraway, 2003, p. 5).

Acknowledging the molecularity of bodies is necessary in order to acknowledge the breadth of what the posthuman subject is. If Pick (2011) is right and an anti-anthropocentric subject would be considered necessarily corporeal, then we must deconstruct what this corporeality means in material terms. Braidotti (2014) writes, "The relational capacity of the posthuman subject is not confined within our species, but it includes all non-anthropomorphic elements" (p. 60).

Some scholars have identified that our molecularity as beings can be seen as a form of resistance of biopolitical control. Wolfe (2014) argues that bodies are not 100% predictable and can respond to biopolitical intervention in random and complex ways, which she terms "aleatory elements" (p. 162). Brown (2015) confirms this, writing that cells are "often unpredictable, outside what science and technology intend" (p. 325). Wolfe (2014) asserts that these aleatory elements are a somatic form of resistance. That said, this form of resistance is in one way fundamentally different from other forms of resistance of power. Foucault's (1982) resistance exists temporally only in response to exertions of power, whereas aleatory elements always exist within bodies, whether they are consciously recognized or not. Wolfe (2014) writes, "In this sense, 'resistance comes first' precisely because it resides not just at the level of the body, 'before' the subject who takes thought, but also in the recursive relationship of the body with its other – with all its others" (p. 162). Given this inherently resistant conceptualization of the molecular body, it is useful to revisit briefly to the notion of relationality, and its role in constitution of the subject.

(3, vii) Relationality

Viewing subjectivity as relational is integral to my intellectual project, one of the goals of which is to contribute to a model of socially and environmentally sustainable social work practice that honours the interdependent web of existence. Donna Haraway argues that "beings do not pre-exist their relatings" (Smuts, 2006, p. 115). The notion of relationality as constitutive is congruent with notions of social and ecological interdependence. The roots of Eurowestern theorizations of relationality can be traced to Indigenous belief systems. In fact, some Indigenous cultures in North America refer to many nonhuman others that would not even be considered living within Eurowestern culture, as "relations" (Corman, 2012, p. 247; Tallbear in Muñoz, 2015, p. 234; Robinson, 2014). Wilson (2008) writes that Indigenous identities is dependent upon interconnections and interrelationships between humans, the land, ancestors, and future generations. He deconstructs the necessity of purely individual subjectivity and arbitrary distinctions between subjects (such as species designations), stating, "Rather than viewing ourselves as being in relationship with other people or things, we are the relationships we hold and are part of" (Wilson, 2008, p. 80). Contemporarily, Indigenous knowledges have been adopted or co-opted into social theory by critical animal scholars (list those scholars), among others (list those other scholars). Corman (2012) identifies that Bekoff, Haraway, and Smuts all "recognize the subject as never divorced from or defined outside of sociality" (p. 157). Smuts (2006) describes human and non-human relational subjectivity poetically, stating, "Our relationships are a perpetual improvisational dance, co-created and emergent, simultaneously

reflecting who we are and bringing into being who we will become" (p. 115). In this research project, I have attempted to engage with this fluidity as much as possible, through use of digital scholarship techniques as well as more traditional ethnographic data collection strategies, that I provide a more multi-faceted picture of the participants and their involvement in the study than has been achieved in previous research, while recognizing that the findings of this study are limited in that even this multi-faceted picture was always already partial due to the ever-changing nature of our beings.

(3, viii) (Non-)Situatedness

Next, I would like to discuss the notion of the subject as a figure that is, or perhaps is not, spatially and temporally situated. In a context where subjects are constituted as embodied figures engaged in relational co-construction, the notion of where and when these figures are situated in space and time is particularly relevant. Contemporary technological, scientific, and theoretical developments have led to upheaval in modernist conceptualizations of figures as spatially and temporally stable, and Braidotti (2013) points out that the posthuman subject in particular is "technologically mediated to an unprecedented degree" (p. 57). In this section, I will explore what the destabilization of the notion of situatedness might mean for subjectivity under posthumanism.

Notions of destabilization of situatedness of subjects are not novel under posthumanism. I began this exploration with Sara Ahmed's (2006) *Queer Phenomenology: Orientations, Objects, Others*, in which Ahmed explores the basic concept of situatedness through orientation – that is,

the way in which our corporeal inhabitancy of space occurs and how it affects us. Ahmed (2006) writes, "Orientations shape not only how we inhabit space, but how we apprehend this world of shared inhabitance, as well as 'who' or 'what' we direct our energy and attention toward" (p. 3). With this definition in mind, the question is thus posed: "What difference does it make 'what' we are oriented toward?" (Ahmed, 2006, p. 1). As individuals, there are a range of responses to this question, but for social work as a field, this question has a particular resonance. Social work is a field caught in an identity quandary between activist and agent of control, and despite our professional discomfort around the issue, much of our collective responsibility revolves around resource distribution. For social work, the question of how we are oriented is an essential one to ask, and one to which the ill-defined, thin response usually consists only of, "social justice" – a response that I have become acutely aware has many interpretations.

Irigaray (2008) writes about unstable temporality in encounters with others. She describes these encounters with other subjects as a tear in her "temporal weaving" (p. 79), and notes that they represent a moment in which "the other is […] a future that is present in the present without any past in this present" (p. 80). In this philosophical framework, temporality is considered as a mutual involvement of the past and the future; two temporalities, linked, and disrupted by encounters between individual subjects. Irigaray (2008) theorizes that these unstable moments require of individual subjects to have a faith in a past that was not their own, and regarding the future, writes, "the other exists before me not to send me back to my own temporality through their absence […] but to hinder it and call for another elaboration of temporality: for a being with the other that lasts" (p. 85). In all of this, encountering the other thus destabilizes the molarity of a single subject's temporal existence. Technology has exacerbated this temporal destabilization.

According to Turkle (2012), it is possible through online relationality to experience interaction outside the “rigors of things that unfold in real time,” because people can be present in a relationship even if they are unavailable when you are present. That said, this kind of dislocated relationship is described by Turkle (2012) as “companionship that can always be interrupted” (p. 10). She notes that originally, digitally mediated relationships were seen as a substitute for in-person interaction, when this was impractical, particularly for those subjects who were overworked and overscheduled. Turkle (2012) refers to this kind of technologically mediated relationality as a “broken communion” (p. 169).

Turkle (2012) writes that digital technologies (as opposed to the Foucauldian interpretation of the word) have displaced identity in the same way that the innovations of the industrial revolution did before (Nancy, 2015), the “architect of our intimacies” (p. 1). In *Program or Be Programmed*, Douglas Rushkoff (2010) discusses the impact of digital technologies and networks on Eurowestern society. He asserts that digital networks are decentralized technologies that allow subjects to exist "everywhere at once, yet - ultimately - nowhere at all," (Rushkoff, 2010, p. 43) removed from linear time, as well as physical place.

This dislocation of technology and subjects who interact with and through it from space and place is also a theme that came up in Berland (2009) and Turkle (2012). Turkle (2012) writes “A ‘place’ used to comprise a physical space and the people within it. What is a place if those who are physically present have their attention on the absent?” (p. 155). This is a particularly interesting question with regards to relationality. Within relationality, subjects are constituted not only through individual interactions between subjects, but also through their interactions with the space that they inhabit. The relationship between space and a subject is reciprocal – “[…] bodies

do not dwell in spaces that are exterior but rather are shaped by their dwellings and take shape by dwelling" (Ahmed, 2006, p. 9). What are the implications of the way that these theories of technologically mediated (non-)situatedness interlock for posthuman subjects? Rushkoff's (2010) conceptualizes this is a theory of "dislocating bias" (p. 51). He argues that digitally mediated relationships between subjects operate on a kind of currency that exchanges intimacy for distance, and that this can result in a disconnect between an individual and their physical locality, resulting in a dislocated relationality. He writes, "It's as if the whole notion of place has been surrendered to the digital realm's non-local reality" (p. 50).

Technologically mediated relationships and this characteristically neoliberal lifestyle can be described as interacting cyclically – they are mutually enabling. Mellamphy and Biswas Mellamphy (2014) critique more deeply the relationship between relational technology and the capitalist complex, even going so far as to describe apps as "hypercamouflaged predatory operatives in their function as covert capitalist capturing-devices" (p. 232). Their critique centres around the usability of contemporary computer and mobile device applications being weaponized to collect data, process information, and exchange intelligence: "The app is a capitalist interface that is designed to be aesthetically appealing" (p. 239). They describe mobile devices as "virtual cells", i.e., "cell[phones]", and apps as "living traps" with "tentacular savvy" (p. 231-232). These devices and their software, according to Mellamphy and Biswas Mellamphy (2014), have the polymorphic capacity to destabilize our congealed identities and transform us into different avatars, entities, and multiplicities (p. 242). In this era of technologically mediated relationality, Rushkoff (2010) constructs "full-spectrum communication" (p. 50) as limited, as well as a subject's capacity for giving and accepting kindness. In addition, Anthropocene living

is described as an urban challenge for the majority of the human population (Iveson, 2015). Given Rushkoff's (2010) theorization of dislocating bias, I found myself wondering what the impact of intersection of these two realities has been on humans' abilities to connect with non-human others, particularly in urban contexts.

Both Turkle (2012), Rushkoff (2010), and Mellamphy and Biswas Mellamphy (2014) present a negative portrayal of technologically mediated relationality and subjectivity that is not entirely congruent with my personal experiences as a late millennial and digital native. This seems congruent with Turkle's (2012) research findings that differences in contemporary perceptions that humans have of technology can be dependent on whether they are digital natives or not. My experiences are more congruent with Braidotti's (2013), who is a self-proclaimed technophile. She writes, "I will always side firmly with the liberatory and even transgressive potential of these technologies, against those who attempt to index them to either a predictable conservative profile, or to a profit-oriented system that fosters and inflates individualism" (p. 57). I also feel that faith in the potential of technologies in the face of its inherent challenges and risks is congruent with a generative posthuman ethic.

All of the authors (list the authors) above frame technology as a mediator for relationships formed between other subjects, primarily human. However, technology can also be framed as a prosthesis, or extension of the subject (Haraway, 2008; Pick, 2011; Roden, 2015). As Haraway (2008) describes, technologies can be seen as "something between us and another bit of the world," or they can be viewed as "organs, full partners in […] 'infoldings of the flesh'" (p. 252). Haraway (2008) quotes Don Ihode, who writes, "Insofar as I use a technology, I am also

used by a technology" (p. 263). Because technology can be framed in either of these ways, the situatedness of relationships involving technology is further destabilized.

(4) Love Ethic

"Don't ever think I fell for you, or fell over you. I didn't fall in love, I rose in it" (Morrison, 2007, p. 387).

Much of the literature that I have explored for this project has deconstructed sociopolitical challenges facing subjects in a contemporary context, including but not limited to, the so-called Anthropocene. Many of the authors also suggested responses to these challenges. In Rose's (2015) call for a biotic, interconnected community where human subjectivity is resituated on ecological terms while non-humans are resituated on ethical terms, there is a call for "respect" as a response to the challenges which face us in this anthropocentric era. Fincher and Iveson (2015) suggested conviviality, "a kind of being together that is not reducible to shared identities – rather, it is a practice of temporary identification with others in a shared space" (p. 27). Fincher and Iveson (2015) note that this kind of ethic and way of being in the world can be facilitated by a number of factors, including the construction of the right kinds of places and spaces in society. In her own chapter, Iveson (2015) about the embracing of what she terms risky attachments, explained thus: "Risky attachments cut across the modernist categories of nature and culture, they stretch out to make connections with unlike and unlikely others, they cross boundaries between humans and non-humans, the organic and inorganic, and displace humans as the only

actor" (p. 32). Smuts (in Corman, 2012), Rudy (2011), and the Haudenosaunee hunters from Short Hills, suggest about acting with compassion. Smuts suggests that compassion is essential for ethical dog training, while Rudy (2011) suggests compassion for those who work with non-human animal research test subjects, and the Haudenosaunee hunters spoke about hunting with compassion.

One of the characteristics of posthuman theory as a genealogical and navigational tool for theorizing the Anthropocene is its generative nature (Braidotti, 2013). Given the challenging nature of the context in which we live, it is essential that a posthuman ethic would break from negativity (Braidotti, 2013). As such, I opted to seek an option that was constructive, rather than deconstructive. In *Loving Animals,* Rudy (2011) suggests that drawing on affect and affect theory might offer opportunities for inspiring political action through movement of the heart. She writes, "Affect does not demand that we abandon reasoned debate. Rather, it recognizes that reason, emotion, flesh, and spirit are inextricably intertwined" (p. 194-5).

bell hooks (2000), in her work *All About Love: New Visions*, writes about a love ethic, which "presupposes that everyone has the right to be free, to live fully and well" (p. 87). She writes that operationalization of this ethic would result in a use of "all the dimensions of love" in our everyday lives (p. 94). If this ethic can be extended beyond the realm of what is human to embrace all the subjects of the interdependent web, hooks' ethic could be another useful tool for disruption of problematic discourse, anthropocentrism included, in order to affect positive change. Haraway (2008) writes that as posthuman subjects – relational, composite, cyborg – we are essentially love embodied. She writes, "We are, constitutively, companion species. We make each other up, in the flesh. Significantly other to each other, in specific difference, we signify in

the flesh a nasty developmental infection called love. This love is a historical aberration and a natural cultural legacy" (p. 16). A posthuman perspective has transformative potential when mapped onto an ethic of love. Much as queer people historically have transformed dominant notions of what love can be, posthuman subjectivity holds similar potential for re-defining love in the Anthropocene. This is made clear when Turkle (2012) writes, "The prospect of loving, or being loved by, a machine changes what love can be" (p. 295).

Philip McKibbin, a European/Māori writer and scholar from Aotearoa (New Zealand) suggests in his work that a love ethic is deeply congruent with decolonial thought based on his knowledge of Ngāi Tahu cosmology. There are obvious parallels between hooks' and McKibbin' work on love, and Rick Hill's principles of the Good Mind (White, 2019). McKibbin states that love is the most important thing in the world (McKibbin, 2019a), and speaks about a politics of love as a space that is not dissimilar to the post-colonial dreamspace that Maracle (2015) describes, in which in which radical equality is the rule, and the outer limits are defined by only by intersectional opposition to all forms of domination.

McKibbin (2019a) asserts that in order to operate from a position of love, we must stop theorizing animals only in terms of their suffering, particularly when OTH animal suffering has, in large part, been manufactured not by animals themselves, but has been imposed on them by colonizers. In defining OTH animals by their relationship to humans, we in fact reify a form of speciesism, premised on a hierarchical values system that evaluates worth based on difference. The dismantling of hierarchical systems is foundational to an ethic of love. In his 2019 presentation, McKibbin references bell hooks' iconic statement from *Feminism is for Everybody:* "there can be no love where there is domination". Human relationships with OTH animals must

first be grounded in the sobering responsibility of the suffering for which we are to blame. Disability scholar Sunaura Taylor (2017) asks, "What would happen if disability communities took back and reclaimed suffering, holding on to all we have learned about the dangers that lie within a discourse of suffering while simultaneously recognizing suffering as a place of potential empathy across difference?" (p. 144) We must choose between some of us being more important than others, and love (McKibbin, 2019a).

Haraway (2003) makes a similar assertion with regards to the reduction and fetishization of love, particularly when it is with regards specifically to our relationship with dogs. She notes that this work of loving is not easy, and we cannot expect it to be easy for others, writing, "Receiving unconditional love from another is a rarely excusable neurotic fantasy; striving to fulfill the messy conditions of being in love is quite another matter" (p. 35).

Love ethic is useful and important, because emotional components of the work of making change cannot and should not be ignored. Not only do emotions serve as a great motivator for working toward positive change, but the emotional toll of this kind of work is heavy and has the potential to be paralyzing. Gaard (1993) quotes an unnamed workshop participant who eloquently said, "The capacity to weep and then do something is worth everything" (p. 3).

(5) Summary

According to Indigenous knowledges, social work scholarship, and critical animal studies, the link between theoretical work and direct action in scholarly fields is essential. This is particularly important where the welfare of a marginalized group, including OTH animals, is the

subject of study. In terms of centring Indigenous knowledges, one of the foundational pieces of this process is recognition that colonialism is an ongoing, contemporary process, and that if we are not active in our resistance of this process, we are complicit in it. In my dissertation project, I chose to take a decolonial approach and open myself and my work to influences from Indigenous knowledges wherever possible and ethical to do so. This decision was consciously made as a disruptive action on colonization within the academy and the field of social sciences research more broadly.

I also explored Eurocentric posthumanist theories that deconstruct the imposition of human interpretation onto OTH animals. The primary function of posthumanism in this study is to critique anthropocentric ways of thinking. Posthumanism is an alternate avenue through which the discreet category of "human" is deconstructed. According to cyborg theories and others, all animals, human and otherwise, can be seen as composite in various ways. The cyborg is an example of this deconstruction, and disability theories teach us that many humans and other animals are already cyborgs in the sense that we use various technologies to survive. Technologies of various kinds can be used to optimize, hybridize, or mediate – and were operationalized to do so in this study. In this way, engaging with technologies is an anti-anthropocentric approach.

I have written this dissertation with an awareness of the political and ecological moment that I inhabit – the Anthropocene, and also a time of political unrest, pandemic, and climate disaster. Challenging anthropocentrism from as many vantage points as possible is essential for holistic wellbeing. Indigenous peoples have survived disasters in the past and have knowledges that can support them in constructing a more socially just framework for our collective future.

Indigenous knowledges and leaders must be centred if we hope to move into a decolonial, socially just world: (1) they understand the importance of living in harmony with the natural world; (2) they are sensitive to issues of power; (3) they have the ability to realize grassroots change, which can move outwards to bigger communities, or inward, to families (McKibbin, 2019a).

Finally, I addressed subjectivity in this chapter, with a focus on OTH animal subjectivity, concluding that subjects are continuously co-constructed through their relationships with those around them – and many of these relationships are technologically mediated. Due to their changeability and permeability, subjects are therefore variously embodied, spatially and temporally. Those of us in social work who involve OTH animals in our practice must see animals as subjects rather than therapeutic objects for our use. In this study, I attempted to work with the theoretical concepts presented in this chapter in order to provide OTH animal research participants with an innovative means of communicating their needs and rights in work environments. Humans must then move forward as allies to these marginalized subjects, embracing an allyship role in advocating for OTH animal rights and needs within the social structures of both human and animal worlds. One way to move forward from this study that embraces the theoretical influences that I have engaged with, as well as the findings that are explored later in this dissertation, is through engagement with an ethic of love.

Method

This research is a qualitative mixed methods study consisting of critical ethnography enhanced with sensor-based research-creation. In this section, I will explain the rationale for choosing the methodological approach and explain the design of the study. I will also weigh the strengths and weaknesses of my methodologies particularly in work that is expanding on Eurocentric posthumanist theoretical perspectives, while attempting to acknowledge and remain grounded in decolonial knowledges. This chapter comprises the first part of the methodology section of this dissertation. In conjunction with the data analysis chapter, it should paint a picture of the practical steps that were used to conduct this study, as well as the rationale behind them. It is a limitation of this section that the voices of OTH animals are less present, due to its mechanical nature.

Critical Ethnography

D. Soyini Madison, author of the 2012 *Critical Ethnography*, frames the critical ethnography researcher as an activist, participating in the scholarly pursuit of exploring data and creating knowledge translation and exchange materials to achieve goals related to social justice and the deconstruction of structures of power and oppression. Popular in social work, this methodology focuses on social change, framed by Madison as a performance of critical theories. Madison references Habermas, who writes, "in which social life is represented and analyzed for the political purpose of overcoming social oppression" (p. 7). In this project, critical theories discussed at length in the theory chapter have been operationalized to the best of my ability

through the methodologies that I chose to engage. I chose to combine critical ethnography informed by decolonial and posthumanist theories in part to centre the knowledges of scholars that are traditionally disenfranchised in my field, and also to de-stabilize the human perspective as the only valid source of data for this project. This study is an extension of my experiences in vegan and animal liberation activism, as well as my academic and practical experiences in critical social work practice involving OTH animals, which were described in my introduction chapter. I chose critical ethnography as the foundation of this study because of its focus on performing research that can be used to dismantle oppressive social structures.

In this study, I hope to challenge anthropocentrism in social work practice, particularly with regards to work with OTH animals in therapeutic contexts. I used Madison's methodological approach as a guide to collecting and analyzing data, focusing on the environments and humans involved in the dogs' experiences, including the service providers who they work andlive alongside, and the clients that they serve. The data collection techniques I employed included semi-structured interviews with these participants, as well as extensive field notes, journals, and observational notes regarding the canine participants. These ethnographic texts were all analyzed as part of my coding process, described in the next chapter.

Research-Creation

In order to enhance the conventional ethnographic data collection techniques I used in this study, I also engaged with emerging digital technologies. This part of the study is intentionally exploratory, a type of research which can be "undertaken when relatively little is

known about something" (Singleton and Strait, 2010). It is the nature of research involving OTH animals that relatively little is known about their perspectives, and this is particularly true in an anthropocentric discipline like social work.

Research-creation is a critical methodology designed to push the boundaries of traditional academic pursuit. For this portion of my study, I always wanted to be generative, and to be focused on process over outcomes. Chapman and Sawchuk (2012) write, "The point is to understand research-creation as a form of critical intervention that speaks to the media experiences and modes of knowing by students and scholars in this moment" (p. 7). This subversive approach is congruent with the decolonial thought that I am endeavouring to integrate into project. Fawcett and Johnson (2019) suggest arts-based approaches to research as an avenue which may allow scholars to address some of the Eurocentric limitations in the field, such as the anthropocentric de-centring of the OTH animal in research that purports to pertain to them. I have chosen a research-creation approach as an arts-based praxis in an effort to challenge some of the limitations.

I drew on my experiences as a graduate fellow with the Sherman Centre for Digital Scholarship where I participated in a research-creation process bybuilding and creating a prototype sensor package that I refer to as Quantified Dog (Legge, n.d.; Appendix E; Appendix J). This sensor package collects basic biometric and environmental data in physically and psychologically non-invasive ways, the data is then displayed in a text file. In the development of the sensor package, I was able test the data collection sensors on my adopted greyhound, Boom. The sensors in this package collected data on movement, loudness of sound, and heart rate. These design choices are further explored later on this in dissertation. As a result, I documented this project on a public wiki, a form of non-refereed community reporting that is in

line with digital scholarship principles of open access (Morgan, 2015), unfortunately no longer accessible online, but it has been included in part this dissertation as Appendix J.

Four factors inspired my use of sensors in this project, aside from the novelty of this approach. First, critical ethnography asks of researchers to consider how we engage in collaboration with our participants in our research projects (Madison, 2012). There are a set of research approaches that one might explore with regards to collaborating with human participants, but this is a particular challenge when working with members of non-human species who cannot communicate in the normative ways that we expect from research participants. It is impossible, for example, to conduct a semi-structured interview with a dog. Part of why I have used this study to explore innovative approaches to research with animals is because of the importance of challenging existing frameworks based on Eurocentric thought. In this research, I intentionally spent my energy on decolonial, Indigenous knowledges, and attempted to operationalize these knowledges in my approach to my work. This meant that some areas of scholarship that are not doing the work to honour decolonial or reconciliatory approaches were necessarily neglected as being beyond the scope of this study.

Second, I was inspired by the Quantified Self (QS) movement that is popular in citizen science communities that congregate around spaces like the Sherman Centre. Although it has a history that can be traced to the 16th century, the contemporary QS participant-led research movement began in 2008, when QS participants began formally congregating at conferences held at academic institutions, like the 2012 gathering at Stanford University, which had over 400 attendees (Swan, 2013). QS in its simplest form is essentially self-tracking of biological, physical, behavioural, or environmental data (Swan, 2013). In the QS community, there is a proactive stance toward using this data for the purposes of goal achievement or general self-

optimization. Clearly, it is not practical for animals to engage in self-tracking, however the principles and practices used by the QS movement are applicable to my research questions, and my ultimate goal of exploring what practices might best support the wellness of working dogs in therapeutic environments.

Third, social work as a profession has traditionally neglected use of technology in our work, and I believe this to be problematic. In the preface to *The Imaginary App*, Miller (2014) writes, "As of this writing," and it is worth noting that this book is now about six years old, "the iPad has been out only a couple of years, and yet more than 45 billion apps for it have been downloaded from Apple, most of them in 2012. Google Android's Play Store has delivered more than 50 billion downloads. Between the two operating systems, that is more than the number of words humanity has generated in its entire existence as a species" (p. x). If technology is this prolific, this ubiquitous, it is completely unreasonable that our profession and our research methods should ignore it. There is merit in exploring emergent technologies, diving headfirst into these quickly evolving and ever-expanding possibilities in academia purely because the realm of possibility is unimaginably broad. If we never knew what we could learn or find out using data gathered by traditional means, surely, we are encouraging the expansion of the limits of human knowledge by incorporating digital technologies into our work and our practice. It would be a missed opportunity to not, in my opinion.

Finally, scholars have traditionally used emergent digital technology in non-invasive research on OTH animals in order to attempt to decipher potential meanings of their behaviour and gain a partial understanding of their perspectives. For example, Estonian researcher Jakob von Uexküll's *A Foray into the Worlds of Animals and Humans* from the early 1900's is an example of ethological research that involved dogs and mapping, an arts-based methodology by

which humans attempted to create a partial understanding of the worlds inhabited by OTH animals (Hobbs, 2016).

Use of Technology in Research

A benefit of using research-creation methodology alongside critical ethnography is that I was able to collect unique quantitative data. In the future, through replication of these methods, this data will be able to be visualized for quantitative and qualitative analysis and knowledge mobilization purposes. Chapman and Sawchuk (2012) note that in order to mobilize knowledge accessibly in contemporary society, new modalities for presentation of findings are necessary to explore. My goal in this project was therefore to collect as much information with the dogs as possible, even if the picture of their experiences that I am able to puzzle together is necessarily partial. Poet Mary Oliver has highlighted the limitations of any technological approach better than I am able in this line from "Her Grave", quoted in Castricano and Corman (2016): "A dog can never tell you what she knows from the smells of the world, but you know, watching her, that you know almost nothing" (p. 185).

There are numerous precedents for the use of innovative digital technologies in arts-based, mixed methodology research attempting to document partial experiences of animals in their interactions with humans. Below, I will describe several examples, and their connections to cognitive ethnological research of Barbara Smuts and Marc Bekoff. One of the best-known examples of this is the meticulous, frame-by-frame and slow-motion video analysis used by Barbara Smuts in her research on various animal relationships, including dogs (Smuts, 2007). Technology has evolved rapidly over the 10+ years since Smuts and her team began using these techniques, yet they are still being employed by researchers today (Flynn et al., 2019).

EPIC_Tom was an arts-based research project that explored animal ethics through communication using emergent digital scholarship. In this case, motion capture technology was employed to explore Marc Bekoff's idea of "biocentric anthropomorphism", also known as "thinking like a dog" (Andreyev, 2017). The outcome of this project was a social and musical performance experience, in which improvising musicians responded to recorded canine voice and communicative gestures. Andreyev writes, "The project explores more-than-human relating through a positive relinquishing of human-centric authorship towards interspecies creativity. Therefore, the project takes on larger societal dimensions where attention to other-than- human communication and creativity is demanded. EPIC_Tom experiments with uncertainty and interspecies generative indeterminacy, thereby undermining assumptions about mastery," (Andreyev, 2017, p. 36).

Dr. Brian Hare leads The Dognition Lab at Duke University, which uses Citizen Science crowd-sourced data to provide cognitive profiles developed through an online tool to dog owners to allow them to better understand their companion animals (Bekoff and Pierce, 2017). The lab is now part of the Duke Canine Cognition Centre, which has been publishing research findings in cognitive ethology since 1998. Their most recent publications centre on friendliness, executive function, and human animal bond (Duke University, 2021). University of Wisconsin-Madison professor Dr. Charles Snowdon used preference tests to determine the types of music that cats would enjoy as opposed to humans, and developed tracks designed specifically for feline enjoyment based on preferred frequency ranges and tempo (Bekoff and Pierce, 2017). Other scientists (list authors) have begun using non-invasive brain imaging technology, functional magnetic resonance imaging (fMRI), in research with dogs. fMRI is a technology based on MRI, which was developed to demonstrate metabolic changes within the brain, primarily based on

external cognitive stimuli (Glover, 2011). The equipment required to perform these scans is widely available. The equipment does not require injection of a pharmacologic agent, and they are relatively low cost (Glover, 2011). In 2018, Cook et al. used fMRI technology to measure activity in the amygdala of dogs, a part of the brain involved in aggression. Metabolic brain activity in the amygdala was measured when the dogs' caregivers gave food to a realistic fake dog as opposed to giving food to the participating dogs, the hypothesis being that their responses may have some similarity to human jealousy. Although this is an emergent area of study, Cook (2017) suggests that studies of OTH animal emotion with dogs have typically focused on expressions of social emotion to the exclusion of other measures. By contrast, fMRI relies purely on physiological response, and therefore may provide new information that we currently lack. In their recent work *The Animals' Agenda*, Bekoff and Pierce (2017) note that there have been two ways in which animals have been studied to evaluate their level of welfare. The first method is assessing mood to determine welfare. Bekoff and Pierce (2017) note that using this method alone, we overlook important factors, often those imperceptible to humans. Using physiological markers, the second method, can provide valuable corroborating empirical evidence that welfare is compromised (Bekoff and Pierce, 2017).

In recent years, social sciences researchers have suggested that there is potential in engaging with sensor-based methods (Müller, 2017). These non-invasive technologies are already being used to improve the health of dogs specifically in veterinary settings, as well as with commercially developed products for domestic use. Companies like Voyce use non-invasive on, off, and near-body sensory technology to consistently monitor pets' health in the home to allow veterinarians to provide more informed care in times of emergency (Voyce, 2019). Products like Whistle and FitBark allow dog owners to set and monitor health goals for

their canine companions, as well as track their locations while they are wearing the small devices on their collars (FitBark, n.d.; Whistle, n.d.). PetPace and Oggii are "smart collars" designed to alert owners to oncoming medical emergencies (Oggii, 2019; PetPace, n.d.).

The technologies used to develop these products are becoming more efficient and less expensive all the time. I hoped that by engaging with them, I could not only develop technical skills that are typically neglected within professional social work training, but are nonetheless relevant in the contemporary workforce, and also to explore the potential of bringing new kinds of data into research with animals that might provide a novel perspective.

Chapman and Sawchuk (2012) write that research-creation is conceptualized as research integrating a generative process as an integral part of the project. I used Arduino microcontrollers and biometric sensors for data collection. These technologies are relatively newly developed, and they are all but unknown within social work. In research-creation, there is a pursuit of theoretical, technical, and creative aspects in tandem (Chapman and Sawchuk, 2012), which is congruent with the dynamic of critical ethnography in which theory and methods are each concurrently informed by the other.

Recruitment and Participants

Recruitment for this study started on May 15th, 2017. I began by distributing form Emails (Appendix G) and a recruitment flyer (Appendix H) approved by the McMaster Research Ethics Board to various purposefully chosen individuals and organizations: some of my past research participants, Therapeutic Paws of Canada, the St. John Ambulance Therapy Dog Program (Markham, Hamilton, Burlington, Oakville and Lincoln divisions), the McMaster University

School of Social Work, the Wilfred Laurier University School of Social Work, Wilfred Laurier University Continuing Education, Wishing Well Animal Sanctuary, the Ontario College of Social Workers and Social Service Workers, Victims' Services, and the Ontario Association of Social Workers. I also posted the recruitment poster on my personal social media accounts. As people responded to these materials, I logged participants in order of contact, assigning participant numbers for future reference.

The initial response to my recruitment materials was much more enthusiastic than I had anticipated, which was very exciting. In my initial proposal, I had suggested that I would be seeking 3-5 participants for this study. Following my initial recruitment phase, I worked to determine the eligibility of the respondents (eligibility questionnaire, Appendix B). Ultimately, I was able to successfully recruit 7 participant groups of social workers and the dogs who they worked with in various therapeutic environments. These environments included large organizations like schools and courthouses, as well as small, private therapy practices. The enthusiastic response to my recruitment materials led me to believe that the population of people who do therapeutic work with dogs in Ontario had not been heavily researched in the past.

One observation that I made during the recruitment process is that many of the interested parties included the names of the dogs, personal anecdotes, and even photos of the dogs who they worked with in their responses to the eligibility questions. This was not a request on my part, nor a component of the eligibility requirements. Given that the dogs were the main participants in this study, I found this appropriate and heartwarming, but it also gave me pause. It is unlikely that people interested in research participation would normally include such

information about human subjects, so why did they feel so compelled when it came to OTH subjects?

The participants of this study were self-selecting in the technical sense of the word. The study was voluntary, as opposed to mandatory, so it is unlikely that the participants in this study would have chosen to be a part of the research if they did not have the wellbeing of their dogs at the forefront of their minds on a basic level. Despite my critical analytical approach to this study, it is possible that the positive bias of the participants has impacted the findings of the research.

Of the 7 participant groups, 6 were social workers who involved dogs in their practice who were also their personal companion animals (family pets). One was a social worker who worked with a human volunteer and her companion animal that provided animal-assisted activities to her practice. Five of the recruited groups were able to fully participate in the study, completing semi-structured interviews either in person or over the phone, as well as up to 2 in-person sessions where I visited them at their place of work for observation and to collect sensor data with the dogs. The 2 other participants were unable to accommodate in-person visits, and therefore participated only in long form, semi-structured interviews. All 8 of the service provider participants were women. No other demographic information was deemed appropriate to collect by the REB, but overall, the human participants in this study appeared to be a fairly homogeneous group, while there was great diversity in the canine participants. The participants in this study were all social workers, and their canine co-workers supported individual clients during narrative and play counselling/therapy, in residential or educational settings, and during legal processes and in courtrooms. They worked with children as young as three, and adults into their senior years. Participants in this study also indicated that they were aware of dogs who

worked in similar capacities with a wide variety of other professionals in healthcare and related fields, including dentists, physiotherapists, and occupational therapists.

Breed	**Size by Weight (Approximate)**	**Sensor Data Collected**
Retriever	75-78 lbs	Yes
Retriever/Lab	65 lbs	Yes
Bernese/Lab	63 lbs	Yes
Yellow Labrador	50 lbs	No; interviews only
Standard Poodle	35 lbs	Yes
Coton de Tulear	<12 lbs	No; interviews only
Yorkie/Schnauzer	18 lbs	Yes

I began conducting long form, semi-structured interviews with participants in September of 2017. I conducted interviews (Appendix C: Interview Guide) with all 8 of the service provision participants, and later I was able to conduct 8 further interviews with service users, as well as one additional social worker who was a colleague of one of the initial participants. These informants were recruited through the initial 8 participants in the study. For these additional interviews, I used a similar interview guide that had been adapted to have more plain language for accessibility. I conducted site visits with the 5 participants who were able to provide observational and sensor data through the month of November 2017, concluding on the 28th of that month.

Interviews

Madison (2012) describes the critical ethnographic interviewer as requiring mindfulness, avoiding reifying hierarchical positions of power between the researcher as "knower" and the Other as "known", approaching the interview critically, and probing participants gently with questions. These qualities are congruent with a critical, anti-oppressive approach to social work practice, and I attempted to embody them in conducting the interviews for this study.

Participant Code	**Participant Group**	**Associated Working Dog**
PA	Dog Caregiver/Handler	Companion Animal
PB	Social Worker	PA's Companion Animal
PC	Social Worker	Companion Animal
PD	Social Worker	Companion Animal
PE	Social Worker	Companion Animal
PF	Social Worker	Companion Animal
PG	Social Worker	Companion Animal
PH	Social Worker	Companion Animal
PI	Co-worker	PF's Companion Animal
PJ	Service User	PF's Companion Animal
PK	Service User	PH's Companion Animal
PL	Service User	PH's Companion Animal
PM	Service User	PH's Companion Animal

PN	Service User	PD's Companion Animal
PO	Service User	PD's Companion Animal
PP	Service User	PF's Companion Animal

The 16 interviews that I conducted for this study comprised my primary data source. To guide these, I used a set of questions that I formulated based on the models outlined in Madison (2012). I began with the Patton Model of interviewing and field notes, which prescribes six categories of questions: experience, opinion, feeling, knowledge, sensory, and background. I also drew on the other models described in Madison (2012), including questions in the advice and once-upon-a-time categories, which are neglected in the Patton Model, in order to ensure that my interview guide was thorough, and in the hopes that my conversations would yield rich, multi-dimensional data.

Sensor Data

Quantitative data was collected using emergent digital technology to enhance the critical ethnographic data. The purpose of this project was as a proof of concept. I wanted to prove in this study that it was possible to use the accessible, non-invasive technologies that I had chosen to engage with to enrich the conventional data that I had gathered. In the future, I hope that this kind of work will create novel pathways for traditionally marginalized researchers who experience financial barriers to their work to compile as vibrant a picture as possible of the work experiences of the dogs involved in social work.

For this project, I wanted to use technology that was financially and logistically accessible to myself and other researchers; in other words, products that I could afford, and that were available in Canada. At the outset of this study, I had essentially no knowledge of computer programming or electronics building, so I was also seeking products that had user-friendly interfaces and English-language documentation. I was aware that these kinds of accessible products were available because of my experience in the maker community, and I felt as though there was untapped potential for their use in research and in social work more broadly. I wanted this study to be relatively easily replicated by other researchers, due to its innovative nature. While this project would serve as proof of concept, invariably the hope is that someone will be able to build on it in the future for more tangible results.

In the QS movement that partially inspired this part of the study, common self-tracking variables include physical activities, diet, psychological traits and states, mental and cognitive traits and states, environmental and situational variables, and social variables (Swan, 2013). For humans, these are commonly and easily tracked through mobile apps or wearable devices such as smart watches or fitness trackers. Some participant researchers may also use more specific or invasive devices such as continuous glucose monitors or peak flow metres to collect health information. For my study, some of these variables were more relevant or possible to collect than others, with the technology that I had available to me. I was unable to find any previous record of data being collected with dogs in this manner.

During my fellowship at the Sherman Centre, I used research-creation methodology and conducted several sensor tests using different products to see what would be the most useful for this project (some details of this process included in my now defunct wiki for the project, included in part in Appendix J). I used an Arduino open-source microcontroller as the

platform for this project and paired it with an expansion component that allows simplified connection of sensors to the Arduino. This product is called a shield, and the one used specifically for this project was the Grove Base Shield 2.0, from a company called Seeed Studio. I chose the Grove products from Seeed in part because Seeed that provides accessible programming resources for various sensorsin English. In addition to this, the Grove system that they've created has the chips mounted in a user friendly way and has created the shield which rfacilitates this. With regards to programming, I also relied on sample code and libraries provided online by Adafruit, which made these sensors much easier to use. The Adafruit resources were usually higher quality at an entry level than what is provided through the Seeed.

When I began this project, I wanted to focus on biodata, and the environmental datawas intended to be secondary. However, given the constraints of the project and taking into consideration the priorities I set about being non-invasive, my focus ended up shifting more toward collection of environmental data over time. I explore this part of my process as a limitation later in this dissertation. Once I had shifted my focus from specifically biometric data, manymore options for the types of data I could collect became available to me. Cost of CO2 sensors was prohibitive. I looked into an air quality sensor, but it was an analog sensor, and I knew that Ialso wanted to include an analog accelerometer. Due to my choice of microcontroller, I was restricted to the use of one analog sensor. Air quality was not my highest priority, as it seemed unlikely that there would be wild variations in air quality in relatively contained environments, and air quality sensors also use a great deal of power.

Ultimately, I chose several sensors that were compatible with the shield to test for use in the project. These included accelerometers, which collect motion data; a heart rate sensor; a temperature sensor; galvanic skin response, which measures sweat gland activity, as in a lie

detector test; a loudness sensor; a light sensor; conductive rubber, used as a breathing rate indicator; a humidity sensor; and barometric pressure sensor.

Based on the results of the initial tests, I settled on six sensors to use for the final project, which I mounted on a conventional dog harness. These sensors were:

- 3-Axis Analog Accelerometer and 3-Axis Digital Accelerometer (one positioned on the dog's back, one positioned on their chest), which measure movement and speed in three dimensions
- Digital Light Sensor
- Temperature and Humidity Sensor (DHT11)
- Barometer Sensor (BMP280), which measures barometric pressure
- Sound Sensor/Noise Detector, which measures loudness sensor

I used an additional shield for logging the data, equipped with a Real Time Clock chip to track date and time, and a power source to fuel the entire package.

When the sensor package was complete, the harness could be worn by a dog, and when the power source was turned on, all of the sensors would begin to collect data simultaneously. This data was logged to an SD card using the shield intended for this purpose. The SD card was then removed from the shield, and the data moved to a computer, where it was viewed and cleaned in CSV (comma separated values) format. The CSV data was then visualized into simple line graphs for interpretation and analysis. I was able to collect sensor data from five of the seven OTH animal participants in this study. During in-person visits to their workplaces, the dogs wore the harness/sensor package that I had built while they engaged with the normal

activities of their workday. Data was collected and visualized as graphs included later in this dissertation, with the support of John Fink from the Sherman Centre for Digital Scholarship (SCDS).

It is important to note that due to the focus on accessibility and affordability of the technologies used in this study, none of the sensors used were certified, and therefore their reliability and accuracy is variable. Furthermore, the data collected was not subject to rigorous statistical analysis, rather the visualizations were examined and interpreted to draw qualitative conclusions to enhance the data collected in other parts of this study.

Data Analysis

Ethnographic Data

My primary sources of data for this study was interviews with participants, including social workers, caretakers of the canine participants in this study, human coworkers who work alongside the dogs, and service users. I used critical ethnographic techniques, including field and observational notes, memos, as well as long form, semi-structured interviews, based on the Patton Model of interviewing (Madison, 2012). The Patton Model provided a clear, thorough, and rigorous template congruent with critical ethnographic methodology that aided me in developing a coherent interview guide, included as Appendix C. This was approved by my committee and theMcMaster University REB prior to initiation of the study. The Patton Model prescribes six categories of probing questions for interviewing on which I based my own interview questions. These categories are experience, opinion, feeling, knowledge, sensory, and background.

Experience questions address the meaning behind concrete actions and ways of doing and are used to gather information about specific kinds of behaviour. Opinion questions interrogate the values or meanings behind the actions documented by experience questions. Whereas knowledgequestions collect information based on the experiences of a participant, feeling questions are lessconcerned with fact, and more concerned with the emotion or feeling that a participant has in relation to a particular phenomenon. Sensory questions give participants the opportunity to describe their corporeal experiences based on their visceral-level sensations. Finally, background or demographic questions help contextualize the data that has been provided

by a participantusing information about their social location.

I also incorporated two additional categories suggested by Madison (2012): advice, and once-upon-a-time. Advice questions are used to probe for personal philosophy or an individual point of view, using the format, “What would you say to others who…” (Madison, 2012, p. 33). Finally, once-upon-a-time questions ask participants to describe a particular experience that they have had to illustrate their engagement with the material explored by the study: “Can you tell me about a time when…” (Madison, 2012, p. 33).

My data analysis process was heavily influenced by the work of Charmaz (2006), which I had prior experience with through my work with the Re:Searching for LGBTQ Health team at the University of Toronto. Charmaz’s (2006) approach allows the researcher to ask analytic questions of the textual data which they have gathered – in this case, transcriptions of interviews, my own field notes, memos, and research journals.

The first step in my analytic coding was developing a code book, which is an intermediary analytical step that helps the researcher elevate individual codes to conceptual categories. During transcription of the interviews, as well as field and observational notes, I noted phrases or ideas that were raised more than once by participants in the study. This resulted in a list of 318 in vivo codes. Developing the codebook was aided through my process of memo-writing during transcription of the data. Charmaz (2006)identifies many things that memos can contain. In this project, my memos contained:

- Spell out and detail processes subsumed by the codes or categories

- Make comparisons between data and data, data and codes, codes and codes, codes and categories, categories and categories
- Provide empirical evidence to support your definitions of the category and analytic claims about it
- Identify gaps in the analysis
- Interrogate a code or category by asking questions of it

My memo-writing allowed me to identify thematic codes that emerged from the data and clarify them using evidence from the text. The codebook distilled my initial list of 318 in vivo codes into a list of 18 thematic codes, included in Appendix D.

Following the development of the code book, Charmaz (2006) suggests two coding phases, initial and focused. In the initial phase, I used MAXQDA qualitative data analysis software. Similar to the more commonly used (and costly) NVIVO, this software facilitates the process of thematic coding for the user. In the initial coding phase, I reviewed all the transcripts and field notes included in the data for this study in MAXQDA, and applied codes from the codebook to words and phrases used in the data where applicable. I modified the codebook slightly as needed. These codes help to select, separate, and sort data, and begin to account for them on an analytic level (Charmaz, 2006). I continued to journal and memo my thoughts throughout the initial coding phase for use in writing my discussion of the data down the line.

Finally, in my focused coding phase, I used the most significant and frequent earlier codes to incisively categorize all of my data according to logical themes that were beginning to emerge through this process. This was also facilitated through use of MAXQDA software. The

program is able to generate reports that summarize the coding process and simplifies the process of identifying important emergent themes by clearly articulating the prevalence of each code within the text being analyzed. This allowed me to easily group codes together in coherent ways and continue to work with the data as the themes evolved. The most significant themes that emerged from the data and their prevalence are listed below.

Dog Behaviours While Working	99
Dog Personalities	95
Interspecies Relationships	70
Training (for Dogs)	47
Work Environments (of Dogs)	39
Dogs' Physical Needs at Work	39
Challenges for Dogs in the Workplace	30
Benefits of AAI Involvement (for Dogs)	22
Organizational Considerations of Interspecies Workplaces	20
Training (for Humans)	15
Types of Jobs Performed by Dogs	12

Participant Group Comparison

Through my data analysis, I also compared the prevalence of emergent themes between the caregivers (social workers, handlers, and dog owners) involved in the study and the other participants that I interviewed (service users and coworkers).

There were several themes where the bulk of the data was derived from interviews with dog caregivers, and other participant data had less of a presence overall. It seemed intuitive to me that non-caregiver participants had much less to say regarding where dogs work and what kinds of work they're engaged in than the caregiver group did, based on the exposure to information that those working alongside the dogs themselves would have versus the industry knowledge that someone working adjacent to them or accessing services might have. Data regarding training, both with dogs and humans, came almost exclusively from participant interviews. This trend was replicated in terms of the dogs' needs, benefits, and challenges in interspecies workspaces. While caregivers spoke extensively and in detail on this theme, non-caregiver participants had less to offer, even when probed.

I was surprised to find that even in terms of the theme of interspecies relationships, proportionately more of the coded segments were derived from caregiver interviews than other participant interviews. It would have been my hypothesis that this theme would have been developed more equally between the two participant groups, if not more on the side of the non-caregiver participants as the supposed beneficiaries of these relationships.

The only theme where other participants and caregivers spoke a comparable amount about dog behaviors while working. That said, the nature of the comments was somewhat different in that non-caregiver participants frequently described physical aspects of the dogs'

work and described the dogs' moods more positively overall than the nuanced descriptions offered by the caregivers.

Therefore, I would suggest that while the participant interviews contributed valuable data to this study overall, it may not be worth the ethical and logistical hassle of including a non-caregiver participant group in follow-up studies regarding specifically the wellbeing of working dogs.

Sensor Data

This part of the data analysis process was explicitly intended as both experimental and creative, in accordance with research-creation principles. The very initial findings that emerged from this part of my process are intended solely to enrich the traditionally collected and analyzed data from the critical ethnographic portion of my work. Quantitative data collected through environmental and biometric sensors will be analyzed alongside the ethnographic data, including field notes that were taken throughout the research-creation process, to prove the concept that the use of this technology alongside ethnographic approaches can begin to compile a holistic picture of the impact that social work has on OTH animals. Because this was a research-creation process, I did not know until I was visualizing the data exactly what kinds of data I would have to work with resulting from this part of my study, or if I would have data to use at all. For instance, in the prototype sensor package that I created through my fellowship with the Sherman Centre for Digital Scholarship in 2015- 16, and tested with my adopted greyhound, Boom (McMaster University, 2020), the sensors that I included were 3-axis accelerometers to measure

body and tail movement, an ear-clip heart rate sensor, and loudness sensors to measure volume of noise in the surrounding environment. Unfortunately, tests with heart rate sensors of various kinds in my process failed to produce useful data, therefore they were not included in the final sensor package. Part of the goal of engaging with research-creation methodology alongside critical ethnography is that I was attempting to generate unique quantitative data that could be visualized for knowledge mobilization purposes – which I was able to finally achieve. Chapman and Sawchuk (2012) notethat in order to mobilize knowledge accessibly in contemporary society, new modalities for presentation of findings are necessary to explore.

During my data collection, I was able to use my sensor package to collect data from five of the OTH animal participants in this study. One of the limitations of this data is that I was only able to collect data from the participants during their time working. In future studies, it would be ideal to collect data while the dogs were in other contexts for comparison of results. During my in-person visits to their workplaces, the dogs wore the harness including the sensor package that I had built while they engaged with the normal activities of their workday. The development of the sensor package is discussed in more detail in my limitations chapter.

In total, the sensor package was used eight times over the course of this project, on seven different data collection excursions with six individual working dogs. Unfortunately, the data from one of these instances had to be discarded completely due to user error in collecting the data. Ultimately, I was able to complete two rounds of data collection with D1 on different excursions, three with D2 during two separate excursions, two with D7 on different excursions, and one with D10. It is worth noting that because of differences of physiology, the same sensor package was used on all dogs, however the setup was slightly different for D10, who was a significantly smaller breed than the other canine participants in this study. Most of the dogs wore

the entire sensor package on the harness provided to them, whereas for D10, the battery pack and microcontroller were held by her handler at the end of a leash and a set of extension cables in order to reduce weight and physical strain on the dog.

Data was collected by the sensors and logged into Comma Separated Value (CSV) files that could be read using Excel. In consultation with John Fink from the Sherman Centre for Digital Scholarship (SCDS), I examined the data collected, and cleaned the files as much as possible, removing information that was clearly unreliable or collected in error, cross-referencing with my field notes for validity. The cleaned data was then graphed using R, a digital system for statistical computation and graphics. It consists of a programming language with the same name plus a run-time environment, otherwise referred to as its complementary software, developed by a non-profit organization called the R Foundation (Hornik, 2020). These visualizations were interpreted to deliver the results described below.

For each instance of data collection, there are six graphs, one to represent each sensor used in the study. Lux, loudness, and barometric pressure are all represented by a single line. Each accelerometer has three lines, each representing one direction of three-dimensional movement. The humidity and temperature sensor has one line for each variable represented in a single graph.

It is important to note that due to the focus on accessibility and affordability of the technologies used in this study, none of the sensors used were certified, and therefore their reliability and accuracy is variable. The data collected was not subject to rigorous statistical analysis. Due to the exploratory nature of this part of the study, the visualizations were examined and cross referenced first, with my interview data and field notes. These contained extensive

commentary from the human participants in this study on the personalities and their interpretations of the behaviour of the dogs that they worked with, as well as my own notes on the dogs' behaviour from my observations. They were also cross-referenced with relevant literature on the subject of expressive body language used by dogs from the field of cognitive ethology (Andreyev, 2017). Using these basic interpretive techniques, I was able to draw qualitative conclusions to enhance the data collected in other parts of this study and demonstrate the usefulness of this exploratory approach for future research.

To my knowledge and according to my research, this method of data collection and analysis has never before been used in social sciences research with animals and has never before been explored in social work research. My goal in this section of the study was to explore whether innovative digital scholarship approaches could be useful to gather data in non-invasive ways. The use of my sensor package and harness, particularly with animals who typically wear harnesses or jackets as part of their working attire, presents very low levels of physical or ethical risk to animal or human participants in this work and therefore investigation. I did not employ video, photo, or audio recording technology in this study, yet through use of the sensor data cross-referenced with my field notes, I was able to achieve a partial snapshot of the behavior and experiences of working dogs in therapeutic environments.

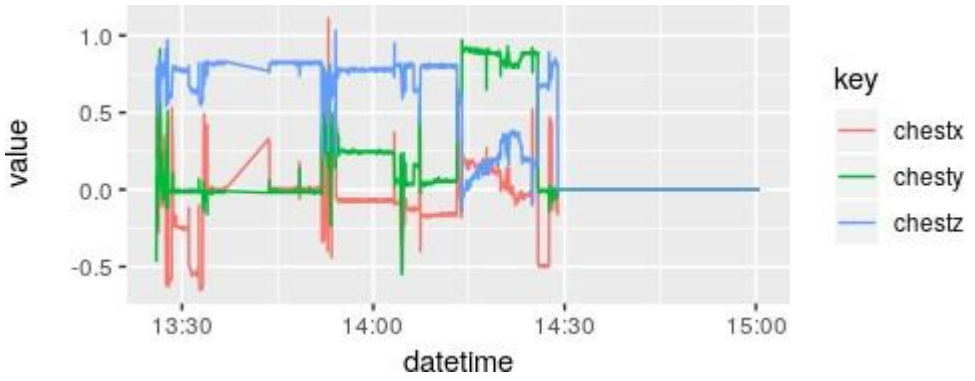
There were two observations regarding the utility of this emergent technology that were documented using the overall sensor data: body position and exertion. In other studies of this nature, for example in the work of Smutts and Bekoff, photography and videography have been used to make observations about theway that a working animal moves throughout a space when they are engaged in their professional responsibilities. Using this technology, an idea of the

dogs' movement can be generated by cross-referencing the data collected by the sensors, particularly the accelerometers with the lux sensor. Therefore, using this data can indicate how quickly a dog has changed body position, laid down or is relaxing without relying on invasive and ethically sensitive image-basedtechnologies. As an example, when the lines in the graph documenting accelerometer data transpose, that essentially indicates a change in the direction of gravity acting on the sensor. Thisindicates that the dog has laid down and rotated the sensor a full 90°.

The graph below is a visualization of the movement of the chest accelerometer for the first visit with D1. Each coloured line of the graph represents one axis (either X, Y, or Z) of movement in three-dimensional space: up/down, left/right, and forward/back. The positions of the blue and green lines illustrating Y and Z axis data from a chest-mounted accelerometer are inverted at around 14:14, and again just before 14:30. This data can be cross-referenced with the lux sensor data, information gathered from a sensor which detects light levels, which can be used to indicate a light source in the room like an overhead lamp or the sun coming in a window. It can then be determined which direction the dog has moved in with a useful degree of qualitative accuracy. This data is most useful when cross-referenced with detailed field notes which include time stamps.

Due to limitations in the technology described above, the utility of the data that may be used to observe and analyze the dogs' physical exertion while working is imprecise. For example, in some graphs, an increase in temperature can be observed when the dog is immobile. This is easily explained because the temperature sensor was positioned on the outside of the harness, but nevertheless was exposed to the body temperature of the dog, who was likely laying down on the temperature sensor at the time. This is illustrated in the chart below, the humidity

and temperature graph for the first visit with D1, which corresponds with the graph above. During the same period of time where we know from the above figure that D1 was laying down, around 14:14 to just before 14:30, an obvious spike in temperature may be observed. I noted no change in ambient temperature in the environment during this time in my field notes.



Findings

This chapter explores the primary findings of this study, which are the overarching themes that emerged from the ethnographic data. This chapter comprises the results section of this dissertation and describes the data that was collected. While the data is summarized in this chapter, it is intended to be an informational, not an analytical section. This summary will be discussed and interpreted in the chapters that follow. The overarching themes that emerged from the coding process described in the previous chapter include: (1), interspecies relationships; (2), dog behaviours and personalities while working; (3), where dogs work and what they do; (4), needs, challenges, and benefits for dogs in the workplace; and (5), training. These will be described in detail in the first part of the chapter.

The second part of the chapter will describe the data collected using the sensor package. The primary finding of this part of my study was the proof of concept of the sensor package itself. One of my main research questions was, how can the experiences of dogs in social work practice be documented? I have expanded on my rationale for choosing this approach in other parts of this dissertation, but this part of the study was largely designed to respond to this question. This sensor package that I developed (see Appendix J for my extensive process notes) is a simple collection of small measurement devices that I assembled onto a dog harness. Initially, I had no technical knowledge of either computer programming or building electronics, so I was not confident whether or not this sensor package would function. Ultimately, these devices, when powered on, collected data from the environment in which the dogs were working while wearing the harness, and collected some data about the behaviour of the dog's corporeal form itself. This data was then downloaded from the devices and visualized using line graphs.

John Fink, a Digital Scholarship Librarian with the Sherman Centre for Digital Scholarship, was an invaluable resource to me in assisting me to visualize this data using the programming system R. Given that social work is not a traditionally technologically advanced field, the assistance and support that I received in order to build my own digital literacy and allow me to engage with the digital technology in this study was truly a collaborative effort and would not have been possible in isolation. Once the data from the sensor package had been displayed in graph form, I was able to cross-reference this data with my interview data and field notes to augment the findings from the interviews with participants.

The first theme that I will explore is interspecies relationships. This was the third most prevalent theme to emerge from my coding process. I used this code to identify any point in my interview data when a participant made a statement about the relationships between the humans and othe animals involved in their social work practice. The humans involved included the participants themselves, their coworkers, social service users, and occasionally other handlers involved in the dogs' care as well as their work. In this section, I will explore subthemes including: (1) types of relationships, (2), dogs' relational responsiveness to the humans involved in their work, (3), the emotional support that dogs provide for their caregivers, and (4) social lubrication.

Interspecies Relationships

All the human participants discussed their personal relationships with the dogs involved in the study, and/or the dogs' relationships with other humans in their workplaces. This theme was highly predictable, given that one of my great joys in researching OTH animals engaged in

social work processes has been how freely and with what great enthusiasm the humans who participate in my research often speak about the animals who are involved in their lives and their work. Further, in prior research, the benefits for humans involved in AAI are extensively documented (e.g., Balluerka et al., 2015, Becker, Rogers, and Burrows, 2017; Burgon, 2011; Connell et al., 2019; Cooke and Farrington, 2015; Frederick, Hatz, and Lanning, 2015; Kloep et al., 2017; Kurdek, 2009; Levinson, 1962; Machová et al., 2018; Pitheckoff, McLaughlan, and Medeiros, 2018), so it stands to reason that the participants in this study would also have positive associations with their co-working and supportive relationships with OTH animals.

Types of Relationships

The dogs were described by human participants as their "babies" (PC), their "own personal emotional support dogs" (PD, PB), grounding presences (PC, PF), their "partners" (PD, PF), their "buddies" (PI), highly attached (PF), role models (PF), nurturing (PH), parts of their identity (PH). This reinforces the findings of even the earliest work on AAI, in which Levinson (1962) explains that animals who participate in AAI play many roles, including companion, friend, servant, admirer, confidante, toy, team-mate, slave, scapegoat, mirror, trustee, and defender. Participants in my study also described their deep bonds with the dogs, and the intense bonds that they, in turn, formed with other humans. PC said, "It feels like she's a part of me." Congruently, PI shared the same sentiments, "As odd as that sounds, it is like we're buddies. There's a connection. One of her first jobs, when she comes in, is to greet me, and we say hi. […] she always seems to make a point of connecting with me and saying hello. It's very nice." Regarding their dog's relationship with service users, PD talked about how service users, "lay on

the dogs and sob into their fur, and all that sort of stuff. Powerful to watch."

Responsiveness

Some of the participants noted that dogs' behaviours seemed to be responsive to the moods and actions of the humans around them in the workplace. Given the anti-anthropocentric basis of this study and taking for granted that OTH animals are subjects with emotional capacity, this finding is both intuitive, and congruent with fields of study including cognitive ethology (Bekoff, 2006; Bekoff, 2007). PC said, "it's interesting to see that with different students, how their energy impacts the animals." Even given what we know about the emotional engagement of animals, it is important to note that positive reinforcement training and human expectations of these OTH animals continue to play a role in their behaviours. This will be expanded upon more deeply later in this chapter. However, PD referenced the dogs' professionalism with regards to this sensitivity, noting, "It's hard to even tell when they're bothered by somebody. They put up with a lot."

Emotional Support for Caregiver Service Providers

One way in which the relationship between a dog who both works with their owner and resides with them is different than a typical domestic companion/guardian relationship is that they rarely spend time apart. While this notable theme was expressed by participants as one benefit of dogs of working in therapeutic environments, it should also be also identified as a unique component of the interspecies relationships discussed in this study. PD said, "the dogs are

still with us all the time except for one 7-hour period where they go with their backup handler." Participants in this study also identified that the dogs who they worked with provided essential emotional support for *them* in the demanding roles that they are in in the social services field. PD stated,

> There's also a piece of… we basically have our own personal emotional support dogs, you know? We take care of them, obviously, that's our primary role, but I remember a situation last year when during a tragic event of the teen suicides, I was having a horrible day, it was later morning, and I was like, I don't think I can do this, I think I have to go home. And [D2] was curled up in the corner, and I went over and started petting her. And after, I had like a resurgence of energy, like I could do the rest of my day. I feel like, cortisol reduction, endorphin release, and all of that that actually physically went on for me […].

These aspects of the interspecies relationships that the human participants in this study have with the OTH animals who work and, in most cases, live alongside them were positioned as positive during the interviews. From an outside perspective, and particularly taking into consideration the agency and consent of the dogs, it does bear noting that these are intense, vulnerable, and potentially claustrophobic relationships that are being described. While the – albeit questionable – norm in society is for many companion animals to live in relative isolation while their caretakers are engaged in capitalistic pursuits, the OTH participants in this study embody the polar opposite of that norm, where they are very rarely, if ever, apart from their human caretakers and coworkers.

Social Lubrication

The language of "social lubricant" has been used to describe the relational aspect in which the involvement of an OTH animal in the therapeutic process can both speed up and facilitate rapport-building between practitioner and client. PH offered this anecdote as an example of this demonstrable aspect of interspecies relationships in social work:

> And she's got these big ears – they comment on those specifically – she's got these big Yorkie ears, so she's got this… it's weird, they're like bat ears. Everybody comments on them. So, I've found that that's something that over the years has been like that for her specifically is the go-to, so then people crack jokes about what they would name her… Dobby the House Elf comes up a lot, from Harry Potter, right, so then it's this cool way to kind of ease into some tough conversations sometimes. I think for her specifically, she can take a joke! She doesn't care if we sit and make fun of her ears for a while!

This finding was again, not surprising, as it has been discussed in prior research (Wells, 2019). Dogs, particularly those with physical or behavioural features that may endear them to humans, have long been credited for their positive role in socialization for their owners (Wells, 2019). Wells (2019) notes that this may be most obvious for individuals who work with service animals, but this study demonstrates that working dogs in other contexts play a comparable role for their caregivers.

Behaviours and Personalities While Working

In this section, I will discuss the study's most prevalent emergent theme, dog behaviours and personalities while working. "Dog behaviours while working" and "dog personalities" were the two most common codes used overall in the ethnographic portion of this study. The theme "dog behaviours while working" encompassed sub-codes such as greeter, lick, sits, sleep, tricks, command, interaction, sniffing, emotional support, walks, and so on. "Dog personalities" was comprised of sub-codes more like friendly, attuned, showing off, relax, cuddly, gloomy, calm, chill, predictable, etc. Sub-themes that will be discussed in this section include: (1), skills, (2), expectations of dogs in the workplace, (3), unique personalities, (4), breeding, (5), and professionalism.

Skills

Dog behaviours that were included in this theme included skills that the dogs performed related to their jobs. PI spoke about the variety of behaviours that the dog she works with exhibits at work:

> She's running to the door, she's checking things out, she's getting food. And you know, there are certain points in the day where [PF] will take her out. Or, if it's a client who's really attached to her, maybe that is kind of like a job or task that gets assigned to them

and they feel very important, and [D3] gets treats, and [PF] teaches them how to give the treats, so. She is, there's obviously down times for her, but there's equally busier times.

A wide variety of job-related skills that the OTH animals possessed were described by the human participants in this study, and they are listed in the table below.

Job-Related Skill	**Participants**
Unstructured interaction with children and other service users	PC, PD, PF
Attending organization events	PC, PD
Crisis response	PC, PD
Calming presence	PC, PD, PE, PG, PF, PH
Comic relief	PC, PD, PK, PM, PH, PA
Identifying service users' moods or emotions, sometimes those that providers may miss	PC, PD, PN, PF, PH
Demonstrating hygiene behaviors through interactive grooming or teeth brushing	PC, PD
Role play or dress up	PI, PF
Greeting	PI, PG, PF, PH
Obedience commands	PP, PK, PF, PH, PA
Cuddling or providing other tangible or sensory comfort	PN, PC, PD, PK, PF, PH
Attentive listening	PN, PK, PE

Leash walks, obstacle courses, other fitness activities, and navigating diverse environments (including elevators)	PM, PE, PH, PA
Support during court appearances	PE
"Visit," which means to go to a service user and rest their chin on their lap	PC, PD, PE
"Over," which means to lay across a service user's legs on the ground	PC, PD, PE
Following caregiver throughout the day without prompting	PF
Sensory support for grounding service users	PF
Games with toys	PF
Demonstrating boundaries	PF, PC, PD
Reward (i.e., receiving a treat or performing another behavior with a service user as a congratulatory interaction)	PF, PH

There is a wide range of skills that OTH animals in interspecies workplaces are described as performing on a day-to-day basis, some of which human service providers are simply unable to offer. Even this basic list demonstrates why human participants in this study found their OTH coworkers to be so supportive of their work, and why having dogs in the workplace is typically found to be beneficial by service users.

Expectations of Dogs in the Workplace

Some of the job-specific behaviours were very targeted toward the work environment. The dogs that worked in large organizations were involved in attending student assemblies and had to remain calm in front of a crowd or accompanying a social worker to have lunch with service users living in group home environments. Some of the dog behaviours were more general, such as remaining calm while they engaged with service users in specific rooms set up for decompression during crisis situations. Below, PH describes her dog's behaviour while working with a service user in the workplace:

> If they get upset, it's actually really cool, because whenever I'm ever sad or upset or sick, she's so not nurturing to me, but when it's in session, or when it's a client, she'll get up when they get upset, walk towards them, she doesn't seem scared, she's comfortable, she's curious, she like goes and licks their hand, she can tell that they're not happy, and she's much more tolerant of them snuggling up to her. She like physical contact from people, but she's not a dog to like, I can't hug her for long periods of time kind of thing, but with the girls, they'll lay on her pillow, and she'll snuggle right up to them. It's like she can sense something, you know how they say that with animals, when someone really needs it. It's kind of neat to see.

Much like human workers, OTH animals in interspecies workplaces fulfill a variety of roles and perform a range of skills that enhance the quality of service that a consumer can access in a social work environment. Interestingly, although many of the OTH animal participants in this study were extensively trained for the jobs that they are involved in, some from the day they

were born, many of these behaviours were simply attributed to the personalities of the dogs by the human participants I interviewed. This theme is explored below, as well as the following sub-themes: (1), work versus outside environments, and (2), perfect fit.

Personalities

"Personality" was another very prevalent theme in the descriptions of the OTH participants by human participants and came up in all 16 interviews. Participants were very eager to explain how the dogs who they have relationships with express their unique personalities in their workplaces. For example, PO, a service user, said, "She's so sweet, and she doesn't look like she's stressed a lot. What else can I say about her? She is perfect for this job. She's perfect."

Many of the dogs were described in this study as predictable, attention-loving, attuned to the emotions and attitudes of people around them, chill, friendly, unconditionally loving, cuddly, sweet, happy, excited, comfortable, and consistent. Fewer of the dogs were described as having intense focus, being nervous, proud, lazy, low energy, loyal, humble, anxious, or a "little gloomy."

Work Versus Outside Environments

Only two of the dogs in this study were described as being very different in work contexts versus outside. PD, for example, said that at home her dog is a "rascal", but at work she is "well-behaved and calm". The difference, according to this participant, is night and day. Conversely, PL described the dog she worked with as more outgoing in calmer situations, but

more "shy and reserved" in group contexts. All of the other participants in this study described the dogs that they worked with as having consistent personalities and behaviours both in the work environment, and outside of it. It would be an interesting topic for future research to investigate how the dogs' caregivers treated them in these two environments, and whether or not differences in human behaviour could be seen as causal for differences in the dogs' personalities in and out of their workplaces.

"Perfect Fit"

Despite the wide array of descriptors used by informants when discussing the personalities of the dogs involved in the study, nearly all of them asserted that their dog was the perfect fit for the work that they are involved in. Below is an example of this, from PF's description of about their dog:

> If you have a hyperactive, busy, busy, dog that would be problematic in moving into more of a therapeutic pacing. You want a dog whose energy levels you can work with. Like I can calm [dog name] down while I do the intensive work, if we want to bring [dog name] into play, I can excite her a little bit, so we can really work with her temperament. So, you need a dog that's very even temperament, and a strong relationship with the dog.

Given the diversity of the dogs involved in this study (see p. 86), and the variety of descriptors in the previous section of this chapter, clearly there was no one uniform personality

that could be attributed to all of the OTH participants. Still, each human participant described their dog as being a great fit for their job. The variety of roles that social workers play in their professional lives may have some bearing on this, but I would suggest that it is more likely that it is simply the other-than-human subjectivity of these animals that is the most important characteristic they bring to their work.

Breeding

Many of the informants described the dogs with reference to their jobs. For example, PD shared that her dog was "just made for the work that she does." PD's companion animal works supporting youth in an institutional setting, largely providing emotional support during one-on-one counselling sessions. In this instance, PD was communicating that her dog's personality was a great fit for this type of responsibility. On the other hand, I found the statement to be interesting because PD's dog was bred and trained by National Service Dogs (NSD), therefore she was literally made for the work that she does.

Professionalism

A related, but lesser-identified, theme which emerged was "dog professionalism." This was a novel finding from this study that I had not encountered in previous work in this area. Participants often used terminology to describe the dogs who they worked alongside that would more traditionally be used to describe a human in a professional situation. I hypothesize that some of this is because of the tensions that exist in social work due to the professionalization of

the field; notions of normative professionalism that are expected of human labourers have also become superimposed onto the working dog in the social work context. Part of my interest in this theme stems from my background in activism and community work, as well as the influence of the theories that impacted this study. Critiques of Eurowestern capitalism are a prominent part of Indigenous and decolonial theorizing. However, the theme of professionalism was also explicitly identified by some participants, including PF:

> […] make sure you have a good breed, you have a smart dog, you don't want a yappy, silly dog. You can't just put any breed in this role. Yeah. And of course, you need to keep the dog clean, well-groomed, it's a professional! It's in a professional environment.

This quote speaks for itself in terms of the normative social expectations being expressed that this human participant has of OTH animals in their workplace. Based on the commonplace selective breeding policies of many service and working dog organizations, however, this participant's perspective can be seen as acceptable in the mainstream. Interestingly, however, I would predict that the other human participants in this study would agree with PF, regardless of the breed of the specific dog that they work with. The inherent hypocrisy is evident.

Within the context of social work and service provision, particularly within the critical part of our profession that in many ways purports to be focused on disrupting oppressive social norms, this perspective is complex. In order to respond to this finding, it would be necessary to be able to answer the question of what we consider to be the standard for "professionalism"

within social work, and who we deem it necessary to hold to these standards. In a generalizable way, I don't think there is one answer to this question.

One of the contextual reasons why this question is complex is because there is such wide variation in the roles that social workers play, where they work, and what their responsibilities are. By extension, this variation also applies to OTH animals involved in social work practice. This theme will be explored in the next section.

Workplaces and Responsibilities

Unlike human labourers, the workplaces and job responsibilities that dogs are engaged with in the social work field are largely determined by factors external to the dogs themselves. The social workers and caregivers to the OTH animals, and in some cases breeders, trainers, and related organizations, make these decisions on behalf of the dogs, largely without their consent. The growth in research and extant literature in the field of AAI suggests that collaboration with OTH animals in social work practice is increasing in prevalence over time, and as such, the work environments where dogs are involved are numerous and varied.

Dogs are expected to fulfill a variety of roles as they are tasked with working alongside varying professionals and diverse work environments. The participants in this study were all social workers, and their canine co-workers supported individual clients during narrative and play counselling/therapy, in residential or educational settings, and during legal processes and in courtrooms. They worked with children as young as three, and adults into their senior years. Participants in this study also indicated that they were aware of dogs who worked in similar

capacities with a wide variety of other professionals in healthcare and related fields, including dentists, physiotherapists, and occupational therapists.

Many of the interspecies spaces that participants in this study occupied were offices or dedicated rooms furnished with comfortable effects such as beanbag chairs, rugs, mats, stuffed animals, pillows, and couches as a way to accommodate the types of tasks that the dogs typically engaged in with service users. Many practitioners spoke about a range of accessories that were kept on hand and that they used in their work with dogs, including leashes, brushes, jewellery, toys, and sports equipment. This was far from universal, however, as other professionals preferred to take their dogs on walks outdoors with clients or used athletics facilities to engage in more elaborate setups like purpose-designed obstacle courses. In other cases, professionals and dogs worked in institutional settings such as courtrooms, schools, hospitals, or residential facilities where the environment was not tailored whatsoever for interspecies engagement.

Conversely, dogs who worked in less regulated environments tended to also have fewer organizational restrictions imposed upon them, for example, PH spoke about the thoughtful but informal process she went through in order to get her pet dog approved to accompany her to work at a residential facility. She explained:

> Yeah, we talked about good boundaries, I talked to the girls in the beginning to make sure that everyone liked dogs. I think to me, I did a lot of forefront of, are the workers comfortable? Am I going to be comfortable? Is the dog going to be safe and comfortable? I did my research ahead of time and talked to everybody before I started bringing her out.

The dogs in this study worked in environments that ranged in their level of regulation, from casual residential settings like living rooms at youth group homes to provincial courtrooms. Whether the dogs worked in more or less regulated environments, participants across the study emphasized that the most challenging aspect of integrating a working dog into an interspecies space wasn't as much about managing the dog as it was about managing the cost, logistics, and other people's behaviours and expectations. Many participants noted the need for extra time between appointments and things like bathroom breaks when they were responsible for a canine co-worker as opposed to when they were working on their own. In addition, participants noted the need for advance preparation when bringing a dog into a new work environment. PE summarized succinctly some of these points, stating, "We planned for months and months and months before we had Merrell. We did training with every single […] staff, […] and the reason it was so successful is because we didn't just walk in there one day and say, okay, Merrell's here."

Practitioners PC, PD, and PH in this study all identified that their work environments were intentionally designed to be welcoming and accommodate the dogs who worked alongside them. Having beanbag chairs or floor seating so a dog has easier access to the humans that they are interacting with is beneficial to the dog, not only to practitioners and service users. It can allow the dog and the agency to set boundaries. For example, the dog, who primarily spends time on the floor and using seating options at floor height, can choose not to interact with people who are not on their "level", for instance, people who choose to sit on a couch or a chair. This makes the dogs' work responsibilities clearer and easier for everyone to understand, because there is less chance for unintentional interaction or unclear communication while essentially sharing a confined space.

In other workplaces, the OTH animal workers are expected to conform to drastically more anthropocentric expectations, regulations, organizational policies, and structures. The variation in dogs' work environments was a particularly surprising finding from this study. While some of the dogs worked in large institutions, for example, a seniors' residence, others spent their workdays confined to small offices, and still other dogs spent a large amount of time commuting between various work environments, either by car or by foot.

One of the major responsibilities that dogs were described as being involved with their various roles was as a "greeter". PH explained that her dog is an ideal worker for this role, stating, "[…] she genuinely just is so welcoming. So maybe just… capitalizing on that a little bit, right? She'll draw people in." Another participant, PI described their dog's job as:

> She's kind of like a little bit like the Walmart greeter. She has the ability to greet people, and all of my clients know her, I talk about her, we talk about if you don't feel comfortable around dogs, we can make sure, but for the most part, I would say everybody that I've worked with is always happy to see her.

In all of the cases examined in this study, the dogs' work responsibilities were negotiated between the social workers who they worked with, and the organization where the social worker was employed. PE's development of her dog's role in her work is an example of this. She said,

> I looked at what other provinces were doing, and other countries were doing in terms of support for witnesses, and they had [name], the first courthouse dog out in [location], so I

> just started doing some research and thought, why aren't we doing this here? So, I started doing some research and got in contact with NSD, and from there, that's pretty much how that's progressed, so that was like a two-and-a-half-year process, from the time we started looking into it to applying and by the time we got [dog].

In all cases, if the dogs involved in the work were unable or unwilling to comply with their training and human expectations of them in the workplace, they would not be welcome in their workplaces, and in some cases, that would put their living situation at risk as well, as many of the dogs involved in this study were adopted or purchased with the primary purpose of working with their caregivers.

Some roles that dogs fulfill were skilled service animals to autistic people, people diagnosed with PTSD, first responders, and veterans. Dogs also work alongside professionals in the community like social workers, but also dentists, and in courtroom situations as witness support. PC noted that across many contexts, one of the ideal times to have a dog or other animals involved in practice is during a crisis.

Needs, Challenges, and Benefits for Working Dogs in Social Work Practice

Three of the most practical themes that emerged from the data were the needs, challenges, and benefits for dogs working alongside social workers. Physical needs of the working dogs was the most prevalent of these themes, followed by benefits that dogs could potentially experience due to their involvement in social work, and lastly, challenges faced by

the dogs. Subthemes that will be explored in this section include: (1), the tension between humans' awareness of OTH animal needs in the workplace and ability to provide for these needs, (2) consent, (3) humans' limited understanding of OTH animals, and (4), benefits.

Participants in this study highlighted repeatedly that like working humans, dogs have many physical needs that must be met in order to enable them to fulfill their responsibilities in an interspecies workplace. They mentioned such needs as: food, rewards or treats, water, a bed, attention, exercise, breaks, naps, access to the outdoors, focus from their caretaker, meeting reasonable health benchmarks, routine, rest after work, equipment like leashes and work vests, and retirement at a reasonable age.

Awareness Versus Provision

It felt clear to me when conducting the interviews, and it also came through in my observational notes, that the human participants in the study felt very aware and mindful of the needs of the OTH animals who worked with them.

By contrast, caregivers' awareness of these needs didn't necessarily translate into those needs being met. Even with knowledge she had, PD spoke succinctly when she said, "their needs come second when they're working". In addition, PF said, "If she doesn't get opportunities to run or play outside of work, she can be more unsettled in session." Unlike humans, the needs of OTH animals involved in any kind of work not protected by any workplace code or regulations, and when cross-referencing with the work environment, the means to meet these needs are often not available to the caregivers responsible for providing them.

Consent

One of the most significant considerations and challenge when it comes to the nature of dogs' needs in the workplace is the question of whether or not the working dogs are able to consent to the work that they are involved in, or whether it is simply required of them. PC addressed this with reference to dogs who worked in the same intense environments in which many social workers practice. She said, "Tragic events are hard, they're hard on all of us. They absorb a lot, but I think that's the flip side as well. […] Absorbing… like, the level of intensity. We chose to do this, as a career. But they didn't choose this. They absorb a lot of it."

In addition to a lack of consent, 9 of the study participants identified challenges faced by dogs in social work environments. Some of these included spending a lot of time in the car, overwork, having to be isolated from their caretakers while working under organizational restrictions (i.e., when caregivers are attending meetings that dogs' are not able to be present for), lack of routine and stability, inadequate unstructured time during the day, humans in the workplace not respecting the needs of dogs', exhaustion, nightmares, little to no control over environmental factors like building temperature, risk of overwhelm in public contexts, or exposure to physical risk or danger (i.e., food or trash that may be eaten). These challenges are important to identify and understand, because they can be as damaging to the dogs who navigate them as they would be to humans in comparable situations. Furthermore, dogs are at higher risk of negative impacts than a human who may be able to identify and articulate challenges and negotiate appropriate solutions in their workplaces.

Limited Understanding

Humans have a limited understanding of dogs' psychology, physiology, and experiences in the world, and therefore we cannot claim to know to what extent these animals are harmed when they are faced by challenges in interspecies workplaces. In this project, I have attempted to gain a partial understanding of some of the needs of OTH animals involved in social work practice alongside their caregivers and handlers, but I have only been able to do so by collecting data through interviews and notes on my own observations based on my knowledge and research around animal care. A major limitation of this data is that I was unable to deduce a way for the caning participants to articulate their own needs and the challenges that face them in the unique and demanding work that they do. It is therefore possible to hypothesize about some of the harms that OTH animals may face in their workplaces, but in order to have documentation of these, further research would be required.

Benefits

Despite the lack of understanding the needs of dogs, as well the challenges, there were some potential benefits for the dogs that participants were able to identify and describe on their behalf. Some participants noted when asked the question on benefits that it was not something they had been asked before, and it wasn't something they had necessarily thought deeply about previously. After thinking and reflecting on this question, participants spoke about how were able to spend the day with their caretakers and other people rather than home alone and in isolation, which results in positive attention and exercise; dogs get to form relationships with

multiple humans; prioritization of their health by caretakers; and finally, having a more active and structured life. While many participants made statements like, "It seems like they like it a lot!" and "They seem happy to be here!", one participant noted that while they thought their dog enjoyed their work, they wondered if it had a positive impact on them, or any notable impact at all. PG expressed:

> I haven't figured out yet – she certainly knows Tuesday morning, Tuesday morning she's at the door, because Tuesday she comes with me as well, so Tuesday she's at the door like, I'm ready. Wednesday morning, we both go to work Wednesday morning and she stays home, and she goes to her crate and lies down. She knows the difference, but I don't see any changes, or I can't pinpoint, oh, that's different for her.

When considering the needs, challenges and benefits that dogs experience in the workplace, both people and dogs need some level of training so that the health, well-being, and a safe work environment for all that are involved. The next theme to be explored will be training for both dogs and humans.

Training

Given the rise in interest in social work with OTH animals in the past several years, one of the things that I interrogated in this study was whether or not the humans involved had been able to or interested in accessing any kind of preparatory or continuing education or training. In

my research and recruitment, it seemed that the number of social workers who demonstrated enthusiasm about working alongside OTH animals or involving them in their interventions in some way was disproportionately high compared to the educational opportunities that were available. Some examples of the training that could be beneficial for humans such as social workers and organizational staff might be around pre-empting possible challenges and considerations at various levels of an organization and management of interspecies workspaces. While some universities have begun to offer coursework that could be relevant to this area of practice, it is far from common or easily accessible.

Ironically, the importance of training the OTH animals involved in these interventions seemed to appear self-evident to the humans involved in the study. The expectations of levels of training that dogs will have engaged in prior to their involvement in AAI was much higher than the training expected of their human counterparts. Training for both humans and dogs in social work did emerge as themes from the interviews examined in this study. I will examine both in this section, beginning with canine training, followed by human training. The subthemes included in canine training include: (1), familiarity and routine, (2), physical cues, (3), training organizations, (4) cost of canine training, and (5) certification and liability.

Canine Training

The importance of training of dogs who work alongside social workers early was mentioned by multiple participants who had dogs that were trained in a variety of capacities, from specific training through a service dog organization to pet dogs who accompanied their

caretakers to work at their private practices. Some participants, such as PC, shared the specific skills that their dogs are trained to perform when working with students:

> She's trained to do a few things. They do what's called a visit command, so you kind of put your fingers together on the lap area, and they'll put their nose and [either gently nudge their body or] keep their nose kind of on the student's leg. She can do an over command, where she can go right over on a student's legs if they legs are kind of out, go right over, and lay on a student and let them pet her.

These skills were outlined more completely earlier in this chapter. Not all the dogs within this study had skills-based training, however, and multiple participants (PC, PD, PG, and PF) simply discussed the importance of predictability and confidence in the dogs' behaviour in the workplace. PG addressed this by saying:

> I think what has been so very helpful has been to do lots of training early, and to get a good connection built up with Libby, and also just to really be aware – I think I was aware with her, I was trying to be aware with her in every interaction from the time we got her, which sounds excessive, however I feel it's made a difference now.

Familiarity and Routine

The importance of familiarity and routine is also a significant aspect in a working dog's training. PA, PD, PG, PF, and PH mentioned that their dogs knew the days on which they would work and were familiar with aspects of their work such as the setting or schedule. PD stated that her dog knew the buildings that they worked in very well, saying that she is "a bit of a rascal, but the coat goes on and we go into a building, and she's just, like well-behaved and calm." Like humans, working dogs respond in specific ways depending on their personalities to having a routine. Social workers who work alongside OTH animals can make choices to either vary routines so that the OTH animals they work with don't experience burnout or boredom, or to adhere to a more rigid routine in order to increase their dogs' comfort, depending on their context or situation.

Physical Cues

Many of the participants used physical cues to indicate to their dogs when they were working, like a coat, collar, scarf, or vest, and noted significant changes in their behaviour as soon as they put these items on their dogs. PE said,

> So, when she's in jacket and working, I don't interact with her in terms of cuddling with her, and petting her and that kind of thing, because when she's in her vest, she knows she's working and shouldn't be focused on me but should be focused on a kid. In a session, I don't want her to get up off the couch and come see me. I want her to be with

> the kid. But when the jacket's off and the vest is off and we're at home, all bets are off. She's in my bed and my dog and that kind of thing.

Another participant, PH expressed:

> […] when she sees her bandana, she's always super excited. That's something that's her cue, she knows when I pull out her bandana from the closet, she does a little dance as soon as she knows she's coming. If she ever stops doing that, I feel like I would pay attention to that.

Importantly, both PC and PH noted that as a caretaker she is always cognizant of the work cues and the changes in behaviour with her dog and that PC tries to remember that when her dog is wearing her vest, she is always "on". There is a two-way shaping of behaviour that is evident in the approach that these participants take to working with their dogs. PC said, "When their coat is on, it doesn't matter if they're sleeping, when they wake up, there's part of them that's always kind of aware."

Physical cues can be an effective tool for communication with OTH animals who are working. Much like human labourers have body language or signals that indicate that they are working, humans can use physical cues to understand when a dog is working, or to express to them the expectation that they behave in specific ways. Conversely, removing a physical cue can indicate to an OTH animal that it is safe for them to relax and is an effective way to

communicate to them that they are free to behave in ways that feel natural to them in their context, rather than adhering to job expectations.

Training Organizations

For caretakers who work with dogs in their practice, the presence and prevalence of organizations such as NSD is significant in the field for its training. NSD is an organization in Ontario that began in 1996 training dogs to work alongside autistic children as service dogs. Today, they use their training program and resources to prepare dogs to work with people with PTSD, providing canine-assisted intervention in organizations, and as fully trained companion dogs for families in need (NSD, n.d.). All 16 of the participants in this study seemed aware of NSD, even if they were not directly involved themselves. Both their dog training program and its accompanying program for training handlers was described by some of the participants who had worked with them. Participants noted that training at NSD begins for puppies at 6 or 7 weeks old and participant PD shared:

> […] the training includes a year with a puppy raising family, so where they're required to do regular puppy raising training, including classes, that sort of thing. Then, these are people who are screened and trained by National Service Dogs, and then she went into [team] training at the organization, so with a number of other dogs.

PC noted that for her dog, this intensive training program meant that she was confident that her dog was predictable at least 95% of the time when she was working, if not more. When asked if she felt that this reliable behaviour that she observed from her dog was a result of training or the dog's personality, she noted that her dog behaved very differently at home versus at work, so she felt that it was due to her training.

Cost of Canine Training

The trajectory of legitimization of working animals' mirrors that of social work, in that as involving animals in therapeutic intervention becomes seen as beneficial and successful, so too does it become formalized, accredited, and increasingly costly. PC works with a professionally-trained dog in their practice and noted that the cost for the level of education that her dog had received was approximately $30,000 – a cost similar to that of a Canadian BSW degree. Despite the cost and obvious barriers, participants defended the training because it contributed to the level of professionalism. PD stated:

> I think the training they went through has been so valuable in terms of predictability piece. So, people who are uncertain about this program have realized that it's nothing negative. Whereas dogs with lesser training or not bred for this work or are not as predictable, they get some resistance in an organization of this size.

Similarly, the complexity of organizational considerations of involving dogs in service provision varied depending on the type of job being performed and in what environment this occurred. More formal institutions like schools or courthouses tended to require that dogs working there have a formal organizational certification, and that the organization involved be accredited and abide by certain standards in order to mitigate liability considerations.

Certification and Liability

PC described that her dog's certification through NSD was the only reason she was allowed to be involved in the school where she worked, stating "That's why the board agreed to having the dogs in the first place. They wanted the dogs to come with that set of standards, because of liability reasons […]." Organizational requirements for certain certifications in order to allow OTH animals in their facilities can influence where dogs will work and what they are doing in that role. For example, while private practices or non-profit organizations may allow social workers to bring their privately trained and owned pet dogs into the workplace to engage in AAI with service users, facilities like seniors' residences or publicly owned organizations would likely require documented certification of the OTH animal's skills. Many certification organizations breed dogs specifically for use in these contexts, meaning that there is little variation in the breeds of dogs allowed to do this work. It also means that the dogs' personalities and behaviours will likely conform to the certification organization's standards, at least in a work context, meaning that there is less variation – and possibly less potential – in skills and performance as well.

Human Training

Human training was a much less prevalent theme than dog training and is an example of the overpowering and often internalized anthropocentrism in social work, even when specifically discussing stakeholders in interspecies work. One subtheme will be discussed in this section, which is body language.

Although some of the participants in this study received training through NSD with their dogs, others had been working in this unregulated field for years and were completely self-taught. In fact, when I added the question about human training to my interview guide, my intention was to refer to specifically about formal training for AAI. When I asked the question, PB referred to much more basic knowledge, for example, being aware of different dog breeds. It did not even occur to me that that kind of entry level training might be beneficial – even recommended – for social workers who might enter into interspecies workplaces following their degrees.

Another participant, PE, noted the importance of training for people who want to do this kind of work. Although it was a positive change for her, she had never owned nor worked with a dog prior to the dog she adopted to accompany her in her social work practice. She said:

> I would say, think about first how it fits into your life. It really is a lifestyle change. It adds time onto your morning, it adds time onto your evening, it adds time during your day. You know, your workday gets longer because people tend to spend more time when

> the dog is there, want to visit for longer than they would. Certainly, I would say, look into it and make sure it fits into your lifestyle, but other than that I would say it's changed my working life, it's changed my outside of work life, all in a really positive way.

Body Language

One way that this type of training could be seamlessly integrated into current social work education would be to use interspecies body language as an entry point. We talk a lot about non-verbal cues with regards to empathy and communication between humans in social work education, but we never address non-verbal cues with regards to anyone or anything else in our environments. PB said:

> I had no training. We did talk about, when we were studying social work, they did talk about how the studies of how pets could be positive impact in bringing the joy, and they say, if I'm not wrong, how there are epilepsy, the dog visits the epilepsy clients and how positive impact of the pet on client's life… so I heard about it in school, but this is the first on hand experience of me doing in my working life.

The theme of training, while limited, serves to demonstrate that although most working dogs are required to have special training from the earliest possible moments in their lives in order to engage in social work practice, the expectations for human education in the field are far from equivalent.

Ethnographic Findings: Summary

In this section, data collected through traditional critical ethnographic methodology was analyzed through qualitative coding. Codes were developed in vivo, and the most prevalent codes were grouped into themes described here. This process is more thoroughly explained in the methodology chapter. The major themes that emerged from this portion of the study were interspecies relationships; dog behaviours and personalities while working; where dogs work and what their responsibilities are; needs, benefits, and challenges for dogs in social work practice; and, finally, training, both canine and human.

The OTH animals involved in practice developed relationships with service users that were described by them as being meaningful. The social workers who they worked alongside also described the relationships that they had with the dogs as important and meaningful to them personally as well, often describing them in familial or affectionate platonic terms. Participants in this study also noted that the dogs were able to facilitate rapport building between humans involved in the social work interventions. One potentially problematic finding regarding interspecies relationships was that the OTH animals who both live and work with their caregivers are rarely, if ever, offered an opportunity to spend time apart from them. This finding merit future exploration.

The findings that were thematically related to dogs' behaviours and personalities while working were broad, in the sense that the primary conclusion to be drawn was that OTH animals involved in social work interventions have a wide array of behaviours and personalities. A

subtheme that came up in this section that will be explored more deeply in the discussion chapter was the idea of dogs needing to comply with normative and capitalist notions of professionalism in their work alongside social workers. The findings related to the theme of workplaces and job responsibilities for dogs were similar. Dogs had a wide variety of workplaces, and their job responsibilities, largely determined by the humans involved in their lives, varied depending on their place of work and the type of social work practice they were involved in. Both of these themes would benefit from quantitative surveying, particularly in this geographic region where this kind of data does not currently exist.

Dogs' needs in the interspecies workplace as perceived by their human coworkers were also explored in this study. The needs described were predominantly basic physical needs, like access to food and water, although some participants described emotional needs as well, like the ability to decompress after a long day. Unfortunately, human participants in this study noted that although these needs are basic, they come second to the OTH animals' job responsibilities when they are working. In terms of benefits that dogs might experience being engaged in this kind of work, they were largely social, in the sense that dogs who are engaged in social work practice are not relegated to isolation or neglect when their caregivers are busy with capitalist pursuits. Based on their knowledge of their OTH animal coworkers, humans in this study were also of the opinion that the dogs largely enjoyed their work.

Finally, training was a theme that emerged from the ethnographic portion of this study. In general, it can be summarized simply. Dogs involved in social work practice tend to be highly trained and this is required of them prior to their involvement. In this unregulated area of social work practice, the humans are largely untrained, minimally trained, or self-trained for

interspecies work or even dog care, and generally express an enthusiastic interest in accessing further training were it to be made available to them.

The findings from the critical ethnographic portion of this study is important because it offers insight into what OTH animals experience while working alongside social workers, with service users, in interspecies environments. This is an area of study that has not been adequately explored as the popularity of involving OTH animals in social work practice has grown over the years. These findings are intended to provide insight to social workers who work with OTH animals in their practice in order to identify areas for improvement, so that both animals and humans can have more positive experiences in the field. In the next section, the exploratory and experimental data that was collected to enhance the ethnographic portion of the study will be described. This data was gathered using digital scholarship techniques.

Sensor Findings

In this portion of the study, I used a research-creation methodology to explore digital scholarship techniques to try to collect environmental and biometric data that served to augment the data and primary findings that werre collected using traditional critical ethnographic approaches. In order to achieve this, I researched, designed, and built a sensor package that could be worn by a dog on a simple harness. Appendix E to this dissertation is a photo collage that shows an image of an earlyprototype of this sensor pack, and the first version of the harness that I produced, worn by D, one of my adopted greyhounds. McMaster University

(2020) also produced an online news article that includes a video of an early version of the sensor pack being modeled and demonstrated by Boom, my other adopted greyhound.

During my fellowship with the Sherman Centre for Digital Scholarship (SCDS), I had the freedom and support to explore various artistic and digital strategies rooted in do-it-yourself culture with sensor technology as a complement to traditional socio-cultural research techniques. I entered this process using my posthuman analytical lens as a starting point, with a focus on questions of cyborgism. Over the course of my fellowship, I explored everything from computer programming to 3D printing to videography to sewing to virtual reality to citizen biology, both at the SCDS and in conjunction with maker communities in Toronto, primarily through hacklab.TO (hacklab.TO, n.d.). This creative exploration allowed me to increase my own digital literacy. Through building and programming electronics with the assistance of my own dogs, I was also able to operationalize technological skills that I learned to interrogate my understandings of interspecies relationships, as well how digital technology can facilitate social research. Outcomes of this process that were unrelated to my dissertation study included a conference presentation on using software and mobile applications and other technologies in a social work practice setting, development of a handout how-to guide for beginner programmers to building code using pre-existing resources rather than starting from scratch, and I also contributed to social research conversations around makerspaces, for example, having provided insight to Dr. Kim Martin on her work around gender and makerspaces in Canada.

In the case of this study, I was able to prove that technological data collection with OTH animal participants to confirm and enhance ethnographic data is possible. The very preliminary data that was collected by the sensors for this study is analyzed in the section below. I have included 16 graphs that visualize the data collected with four dog participants (D1, D2, D3, and

D4) over the course of seven sessions. The graphs illustrate the data collected along with the details of dog participant, the session and the sensor packages that were worn by the dogs during this study in Table 1. The second table is an interpretation key to facilitate legibility of the graphs. Following the tables is a diagram showing two images of dogs where the sensors were placed on the harness and worn by the dogs during the study.

Next, findings from the sensors are detailed according to the dog participants (D1, D2, D3, and D4). Each of the four areas include a brief detail about the dog participant and the number of sessions, followed by graphs illustrating the data collected. In the graphs significant areas have been highlighted with a circle and is followed by an explanation explaining the session as recorded by field notes and what the sensor data is showing during that session. One major finding of this study is that the technology that was used does have the ability to be employed by someone with limited digital literacy to gather data that can be illustrated and analyzed successfully.

Figure Number	**Participant**	**Session**	**Sensors Used**
1	D1	1	Light, back-mounted accelerometer, loudness.
2	D1	1	Temperature and humidity, chest-mounted accelerometer, and barometric pressure.
3	D1	2	Light, back-mounted accelerometer, loudness.
4	D1	2	Temperature and humidity, chest-mounted accelerometer, and barometric pressure.
5	D2	1, part one.	Light, back-mounted accelerometer, loudness.

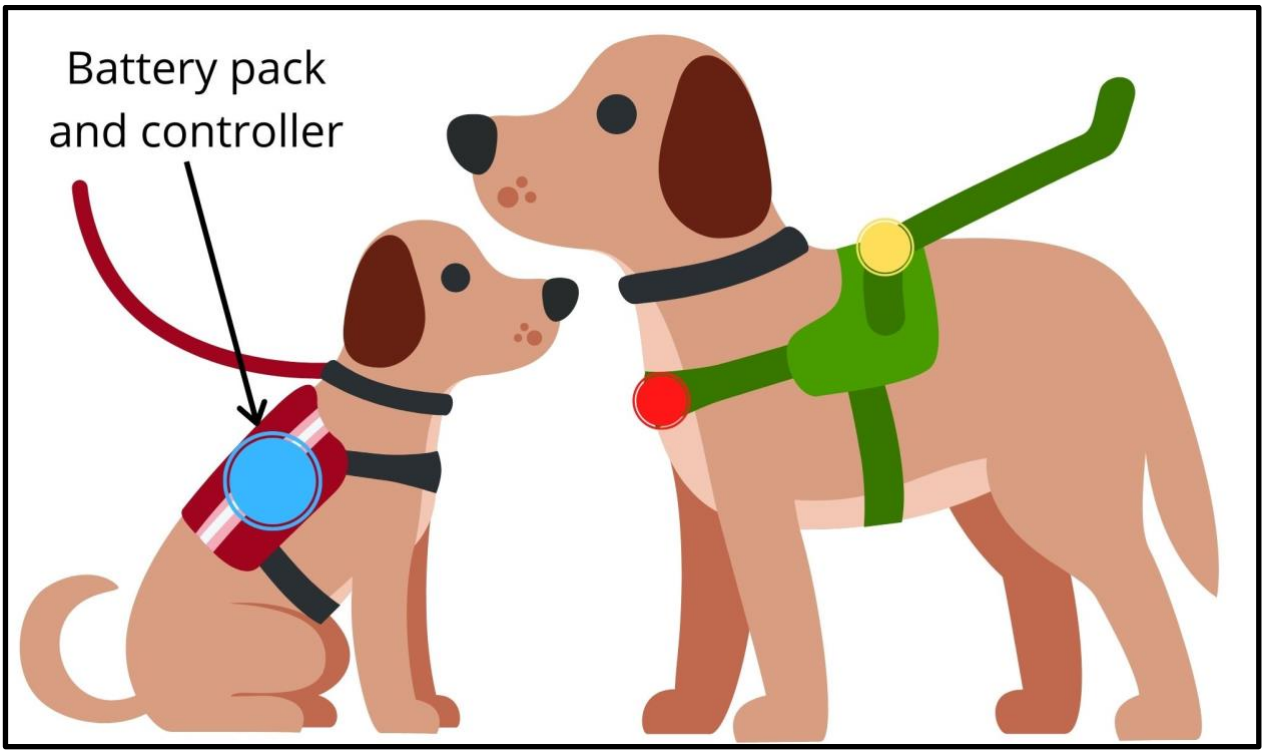
6	D2	1, part one.	Temperature and humidity, chest-mounted accelerometer, and barometric pressure.
7	D2	1, part two.	Light, back-mounted accelerometer, loudness.
8	D2	1, part two.	Temperature and humidity, chest-mounted accelerometer, and barometric pressure.
9	D2	2	Light, back-mounted accelerometer, loudness.
10	D2	2	Temperature and humidity, chest-mounted accelerometer, and barometric pressure.
11	D3	1	Light, back-mounted accelerometer, loudness.
12	D3	1	Temperature and humidity, chest-mounted accelerometer, and barometric pressure.
13	D3	2	Light, back-mounted accelerometer, loudness.
14	D3	2	Temperature and humidity, chest-mounted accelerometer, and barometric pressure.
15	D4	Single session	Light, back-mounted accelerometer, loudness.
16	D4	Single session	Temperature and humidity, chest-mounted accelerometer, and barometric pressure.

Graph Interpretation Key

Term	**Symbol on Diagram Below**	**Interpretation**

Value	N/A	Unit of measurement for data collected by sensor. In all cases, value increases along the Y axis of the graph (as the line rises, so too does the value).
Datetime	Blue circle.	Time stamp assigned by the sensor when the data was collected. Time is recorded in the 24h format and was recorded in eastern time. To protect confidentiality, the date of the session has been omitted from these graphs.
Lux	Yellow circle.	Unit of measurement for ambient light level.
Backx, backy, backz	Yellow circle.	Accelerometers measure movement along three axes in three-dimensional space: up/down, left/right, front/back. Each line represents one axis of measurement. In this case, the accelerometer was mounted on the participant's back.
Loudness	Red circle.	Measure of the volume of ambient noise.
Humidity	Blue circle.	Measure of ambient humidity.
Temperature	Yellow circle.	Measure of ambient temperature (see limitations, as measurement of ambient

		temperature was affected by dog's body temperature).
Chestx, chesty, chestz	Red circle.	Accelerometers measure movement along three axes in three-dimensional space: up/down, left/right, front/back. Each line represents one axis of measurement. In this case, the accelerometer was mounted on the participant's chest.
Baro	Blue circle.	Measure of ambient barometric pressure.



Findings: D1

Data was collected twice with participant D1. Data from these visits can be seen in figures 1 through 4 below. I made two visits to observe participant D1 while working, and figures 1 and 2 are from the first visit, while figures 3 and 4 are from the second.

During my first visit with D1, sensor data was collected while D1 interacted one on one with child-aged participants in individual therapy with the social worker who is D1's caregiver and handler (figure 1). In my field notes, I had recorded that D1 seemed very relaxed, sedentary, and affectionate, if somewhat disengaged in the process.

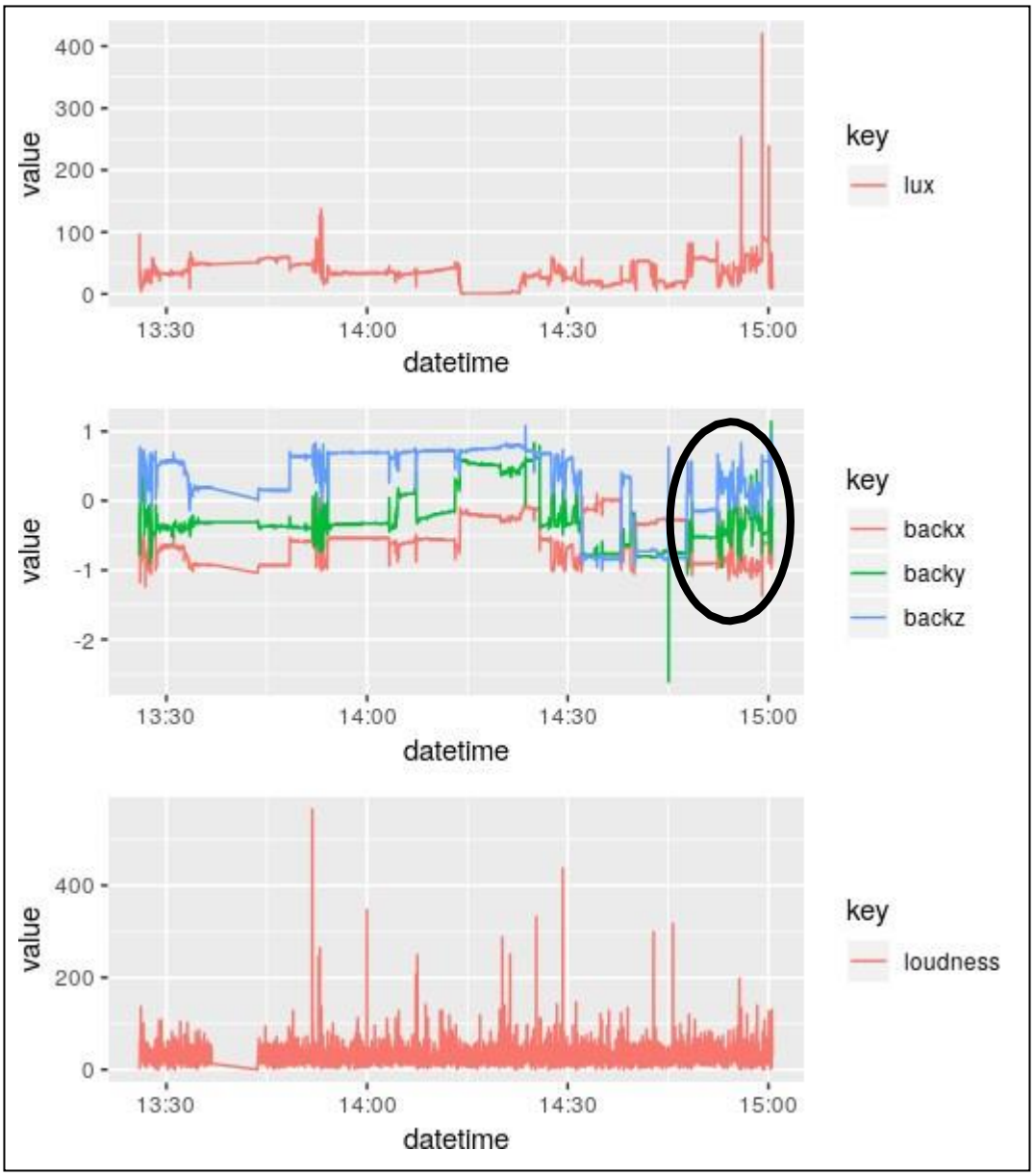


Figure 1: Participant D1, data collection session 1. Graphs show light, back-mounted accelerometer, and loudness.

The sensor data is concurrent with my field notes. Levels of light and sound in the room were low throughout the visits, as is illustrated by the low values for lux and loudness in the first and third graphs of figure 1. Throughout the visit, there was very little variation in light level, and the value was consistently low. The slight variations in noise level that can be seen

throughout the session are the result of conversation between D1's caregiver and me. The peaks that can be seen in loudness level (the third graph in figure one) are caused by doors opening and closing when study participants entered and exited the room. One of the big benefitsof using sensor technology for data collection in this context is that these graphs illustrate the movement through the space and some of the action happening to and around the participating OTH animal without posing any risk to the privacy of the human participants involved in the study. This distinguishes these approaches from, for example, video or audio recording technologies, making them far more useful in sensitive contexts like social work practice.

The second graph in figure 1 shows that the dog's movements were minimal during this session, punctuated by short periods of activity when new clients were arriving from outside of the room, or D1 was shifting body position. Each of the three lines (blue, green, and red) of this graph indicates one direction of movement from the sensors located on the participant's back – up and down, side to side, forward and back. The more that the values change, the more movement was being measured by the sensors. In the second graph (figure 1), at 14:50 and circled in black the data, shows many changes in value in the data represented by the blue, green and red lines. According to my field notes at this time, D1 was behaving playfully with a service user. The sensor data here can be used to confirm that for a period of about 10-15 minutes, D1 was very active in her engagement with a service user. This has been documented, and is easily referenced later, without use of more expensive, sensitive, and invasive audio or visual data collection. In future research, sensor data could be used as an alternative to these more logistically and ethically challenging methods of collecting data, while still providing valuable information about the embodied experiences of OTH animals while working.

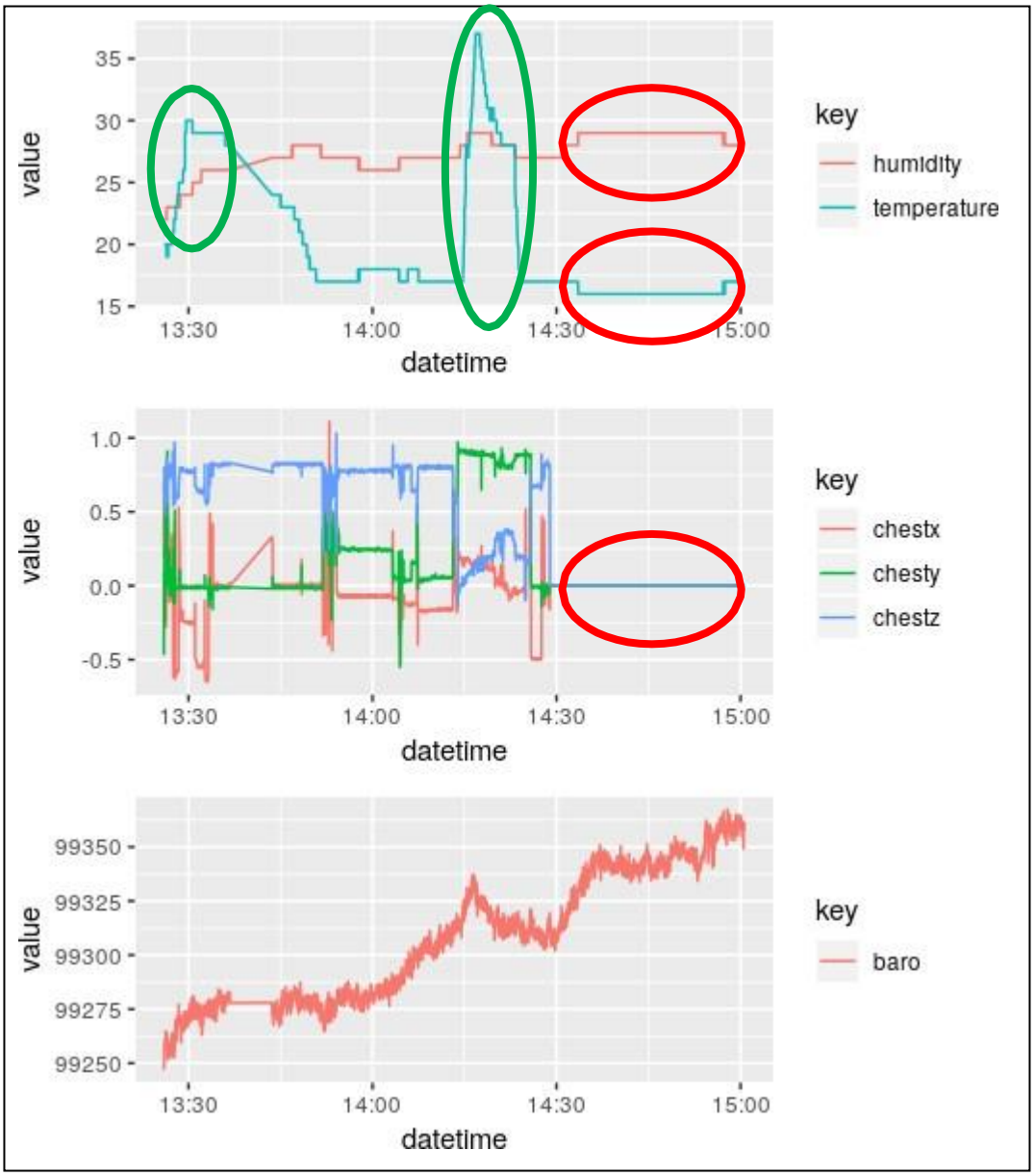


Figure 2: Participant D1, data collection session 1. Graphs show temperature and humidity, chest-mounted accelerometer, and barometric pressure.

Some data collection errors are observable in graphs 1 and 2, which is a limitation of the use of these new technologies. For example, the chest accelerometer and humidity/temperature sensor data visible after the 14:30 time mark in the graph 2, and circled in red, were caused by

human error in using the technology. The third graph in figure 2 is the visualization of barometric pressure data. During the session, the barometric pressure rose steadily in the environment in which the data collection took place. It is normal for barometric pressure to naturally vary; however, some animals are sensitive to variations in pressure. According to my field notes, D1 did not react in any way observable to me to these changes. Temperature spikes (circled in green, graph 1, Figure 2) indicate when D1 was lying down on the temperature sensors, causing the temperature to rise as data was being collected.

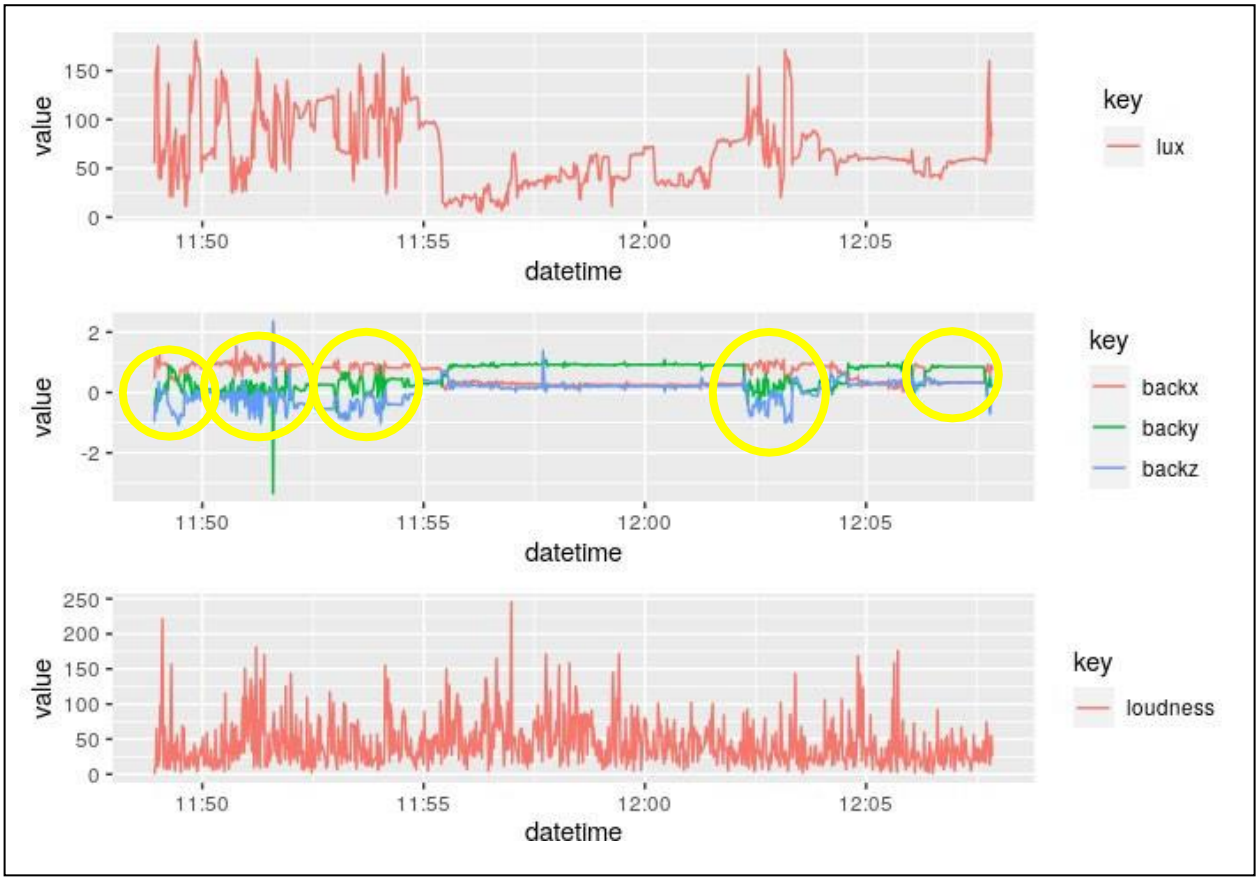


Figure 3: Participant D1, data collection session 2. Graphs show light, back-mounted accelerometer, and loudness.

Figures 3 and 4 illustrate the sensor data that was gathered during my second visit with OTH animal participant D1. The second visit was similar to the first, except that it took place in a different physical environment that was brighter and had more variable levels of noise. In the first and third graphs of Figure 3, the levels of light and noise lines have moved up and down often and widely. For future research, this data could be used to confirm observations made in field notes regarding the environment in which research is taking place, without the use of more invasive and expensive video or photography equipment. In this case, I did not make extensive notes regarding D1's reaction to the environment, indicating that her behaviour appeared normal to myself and the human participants involved in the data collection. In other studies, or contexts,where unusual or uncharacteristic behaviour was observed, environmental data may provide insight that researchers would not otherwise have access to, either because this data is not commonly collected, or because humans are unable to perceive slight changes in some environmental factors without technological assistance. In this exploratory and creative study, this data allows us to envision the potential of these data collection methodologies for future work in this area.

In my field notes, I had recorded that D1 appeared "More active, engaged, enthused, curious, bright-eyed" than my previous visit. On my first visit, D1 had exhibited great patience when being moved or instructed by their handler but had not been actively interacting with service users who attempted to get their attention. D1 also spent part of the first visit sleeping. During my second visit, I observed more tail wagging and attention-seeking from D1, as well as an overall shift in demeanor from the previous visit. Based on my own knowledge of dog

behaviour and confirmed by the human participants as sources of knowledge for this study, I noted that tail wagging and attention seeking behaviours from D1 likely indicated a positive, upbeat mood.

The second or middle graphs in Figures 3 and 4 are visualizations from the accelerometers (back and chest sensors, circled in yellow), which measure D1's movement. Although there are periods of calm where the lines are almost flat, there are also frequent periods of variation. D1's handler noted that the two service users who I had observed D1 interacting with on my first visit were not among D1's favourites (Figure 1), and that D1 tended to be more engaged and positive with the service users who I observed interactions with during this second visit (Figure 3 & 4). My observations and D1's handler's comments were concurrent with sensor data, in which particularly the chest sensor indicated more movement overall than the previous visit (second graph, Figure 3).

There is no pre-existing literature that has used environmental or biometric sensors with working OTH animals in interspecies workplaces. This data is purely exploratory and was gathered in a research-creation methodology in order to probe whether or not it was possible to do, particularly for researchers with very limited exposure to related fields such as computer programming or electronics construction. While the data here does not give us concrete, well-articulated findings, it does serve to demonstrate that there is future potential in this methodology. The sensor data here adds a third voice to this study, one that is at least in part operated by OTH animal research participants. In analyzing the data, we can cross-reference the data collected through field notes and observations from the perspective of the researcher, interview data from the perspective of a human participant, and this third source, quantitative

data that is provided through a relational interaction between OTH animals, digital sensors, and the environment.

In this case, the sensor data agrees with the researcher and participant perspectives and serves to confirm that during my second visit with D1, she moved and interacted with humans more than on my first visit. Any number of hypotheses can be drawn from this triangulated data, but the value of it here is simply that I was successful in capturing it and involving D1 in my study in an innovative way that has not been achieved in the past.

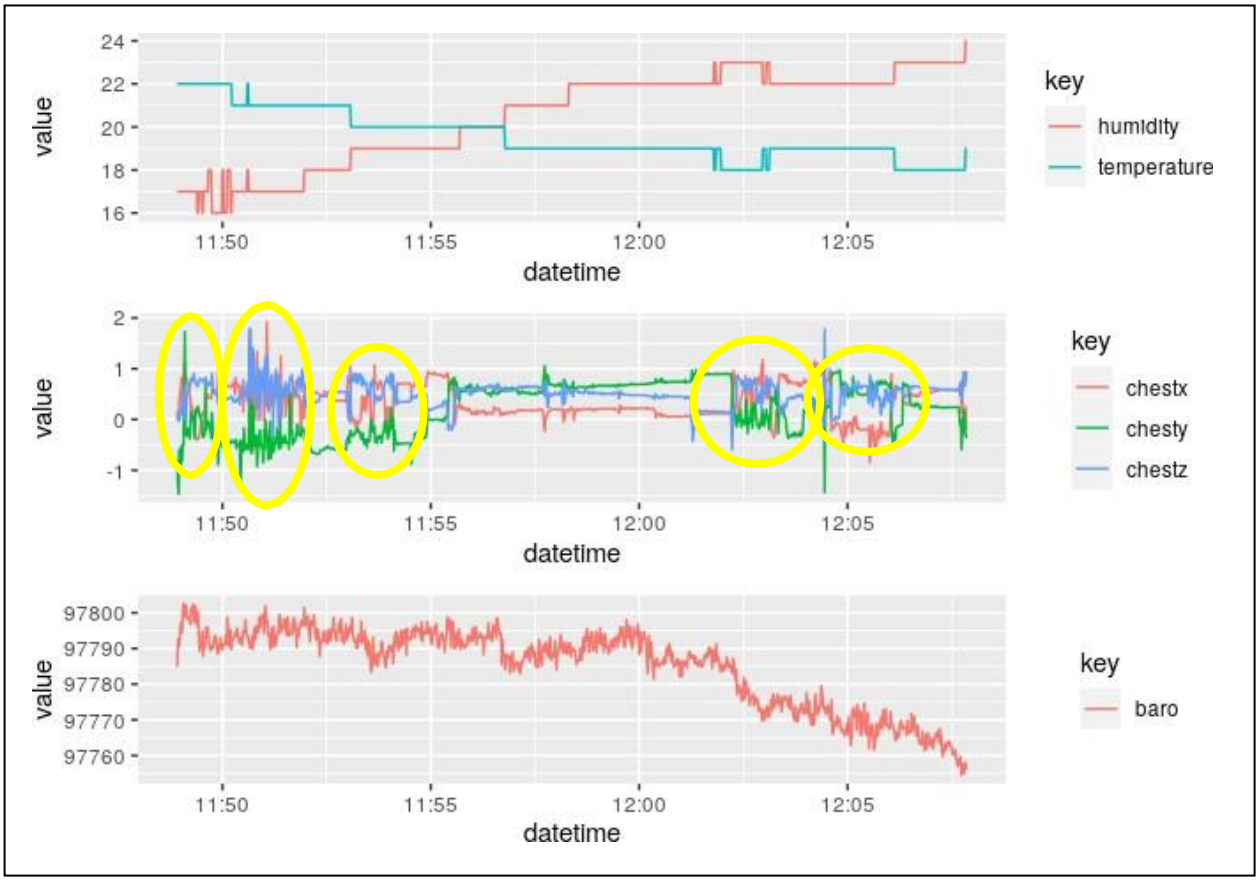


Figure 4: Participant D1, data collection session 2. Graphs show humidity and temperature, chest-mounted accelerometer, and barometric pressure.

The graphs in Figure 3 corroborate findings from my field notes regarding D1's behaviour during data collection sessions. Light levels (lux) and air pressure levels (baro) vary due to environmental factors like the weather and climate control. We can also tell that from day to day, D1's behaviour while working, particularly in terms of her level of physical activity, can vary. Because D1 works in an educational institution, physical activity is limited to movement around the room in which one-on-one session between the social worker and service user take place, and occasional engagement by service users with toys or other implements such as brushes. This behaviour does not seem to be heavily impacted by environmental factors in her work environment, which appear relatively stable and unobtrusive overall. To the best extent of my knowledge and abilities, this sensor data accurately reflects what I had noted in my observational notes and the comments made by the humans who work alongside D1. Because of this, it can be hypothesized that differences in D1's behaviour, therefore, are dependent on the nature of the work that D1 is engaging with that day, her caregiver's expectations of her, or her mood. Future research about the reliability of the sensor data should be conducted.

Findings: D2

Data was collected three times, during two separate visits with participant D2, this has been illustrated in Figures 5 through 10 (see below). In the first visit with D2, I purposely turned off the sensor package for a short period of time. This can be observed in the graphs in Figures 5

and 6, between rough time marks 11:17 and 11:27 (circled in red) where a flat line is displayed in the middle of the graph data.

During my first visit with D2, D2 interacted with clients in a group and in a public setting and data was collected twice with D2, once before lunch, and once after lunch. In the first session with D2, light and loudness remained consistently low during this visit, I observed the social worker relying on the natural light from outdoors and kept the electric lighting off. Thus, resulting in the low value for lux in the first graph of Figure 5 (see below). When the light was turned on at the end of the session, the lux line peaked and is circled in blue (first graph, Figure 5). In my notes I observed that D2's movement remained minimal, and this was confirmed by the sensor data. It was not until the end of the session when the client was leaving thatD2 was being rewarded and praised for her work, during which time she was wagging and moving around. In Figures 5 and 6, the middle graphs (chest and back) and circle in purple show this increase of movement. The barometric pressure, temperature, and humidity during this session with D2 varied within a normal range and there were not observable indicators that she reacted to any of these noted.

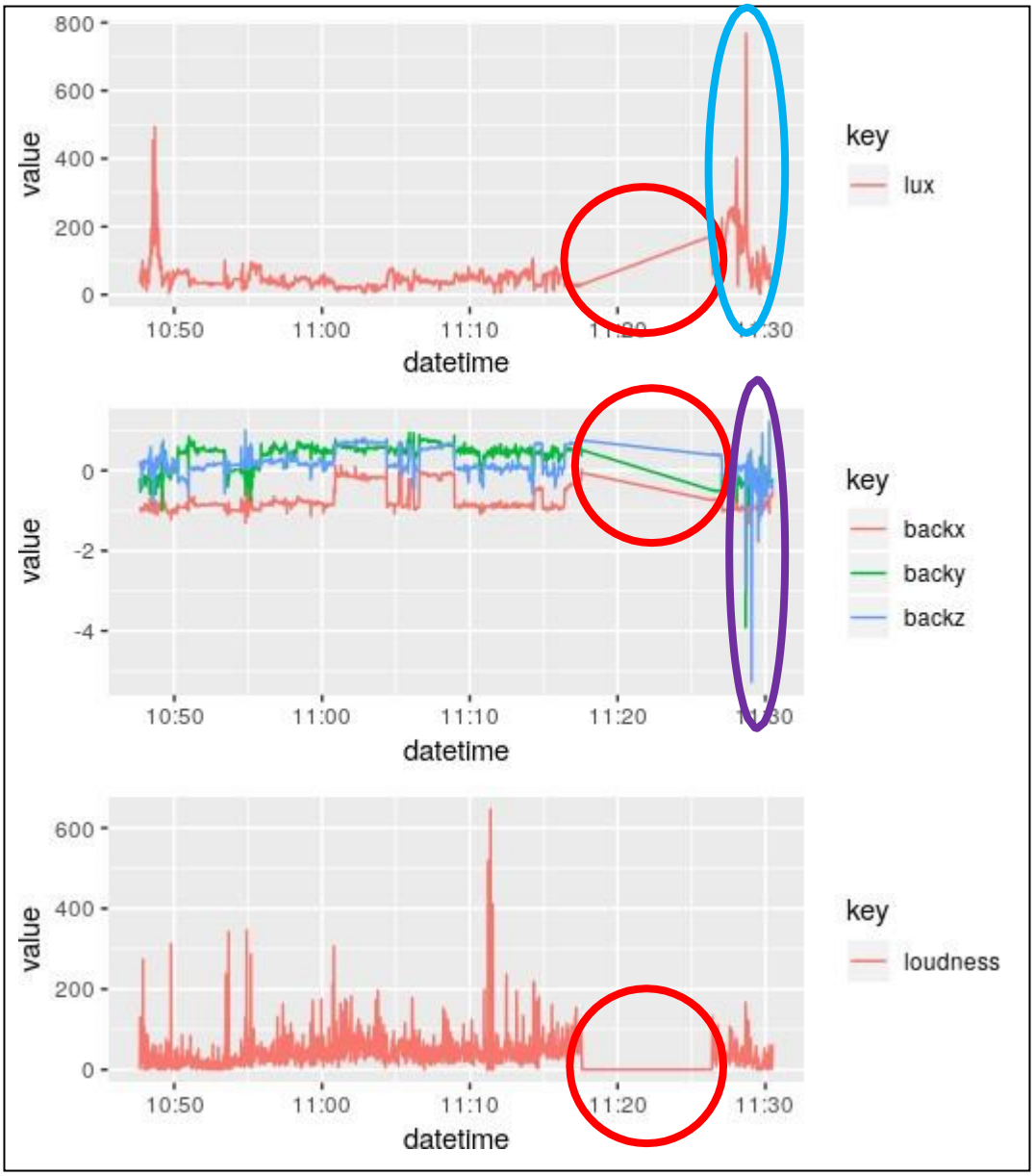


Figure 5: Participant D2, data collection session 1, part one. Graphs show light, back-mounted accelerometer, and loudness.

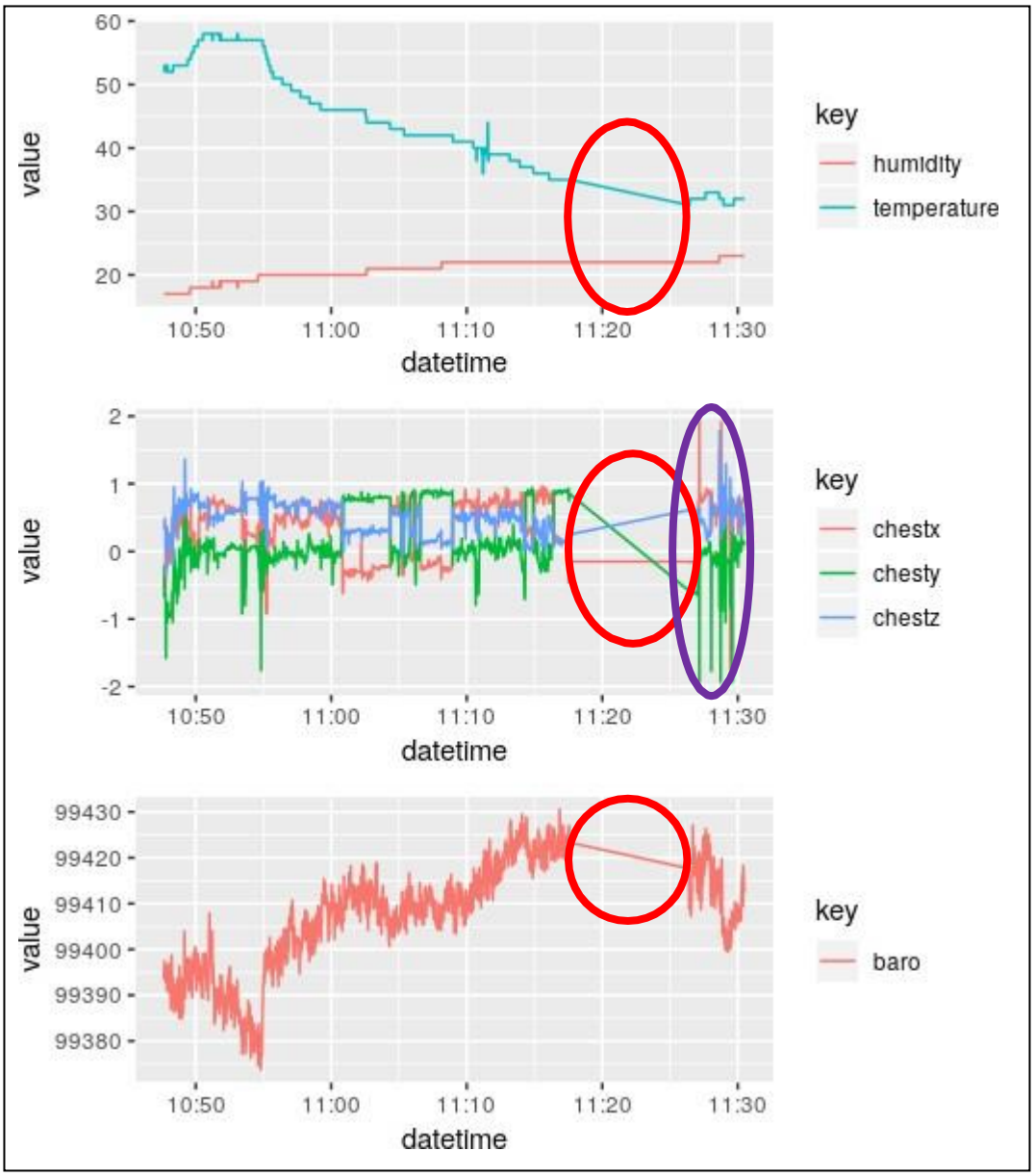


Figure 6: Participant D2, data collection session 1, part one. Graphs show temperature and humidity, chest-mounted accelerometer, and barometric pressure.

The second session with D2 was during the same visit, but later in the day, with a group of clients in a public setting. The data from this session is illustrated in Figures 7 and 8 (below). The graphs in Figures 7 and 8 show that light remained low during the second session as during

the first (illustrated by Figures 5 and 6 above). Also, like the first session, barometric pressure, temperature, and humidity varied within normal ranges, and according to my observations and the remarks made by D2's caregiver, they did not seem to impact D2 in observable ways.

In the second session (Figures 7 and 8), temperature peaks can be seen in the data (Figure 8, from 14:15 to 14:20, first graph, blue line, circled in green). When I refer to my field notes, I recorded that D2 was "laying in all kinds of silly positions during the interview" and observed D2 lying on the harness and covering the temperature sensor. In my notes, I described D2's habits of lying flat on her back with her paws in the air and twisting into uncommon resting positions for a dog of her size. During these times, her body would have pressed the temperature sensor into the ground, and it would have recorded higher temperatures than the ambient temperature in the room due to D2's body heat. These peaks in temperature can be used in combination with field notes to confirm the periods of time that D2 spent laying in specific body positions, without use of additional visual aids.

I also observed that D2 was more active and engaged with movement during the second session than during the first. In my field notes, I wrote that D2 was awake and receptive to the work that she engaged in that day. However, the service users that she engaged with and her caregiver/handler expressed that D2 was less reactive and more tired than usual.

D2's movement can be observed in the second graphs in Figures 7 and 8, which visualize data collected from the accelerometers. When the values change, represented by the lines going either up or down, this represents movement in one of three directions: up and down, left and right, or forward and back. When the graphs in Figures 7 and 8 are compared with the data from graphs in Figures 5 and 6, the variation in values in all three lines of the seconds graphs in

Figures 5 and 6 is less than in Figures 7 and 8. In this case, my field notes and the sensor data were incongruent, however the sensor data reflected what the human participants in the study had told me about their observations of D2.

This is an important result of this study. The human participants in the study have a much closer relationship and better rapport with D2 than I do as a researcher, therefore they are potentially in a better position to understand and interpret D2's behaviour accurately than I am. I have a limited understanding of D2's behaviour as an outside observer meeting her for only the second or third time in this session. Importantly, the data collected by the sensors in this case supported their observations, which conflicted with my own. This confirms for me as a researcher that I need to re-examine my interpretation of D2's behaviour during this session, and that information collected from participants in the study may be a more reliable representation of D2's perspective than my own field notes.

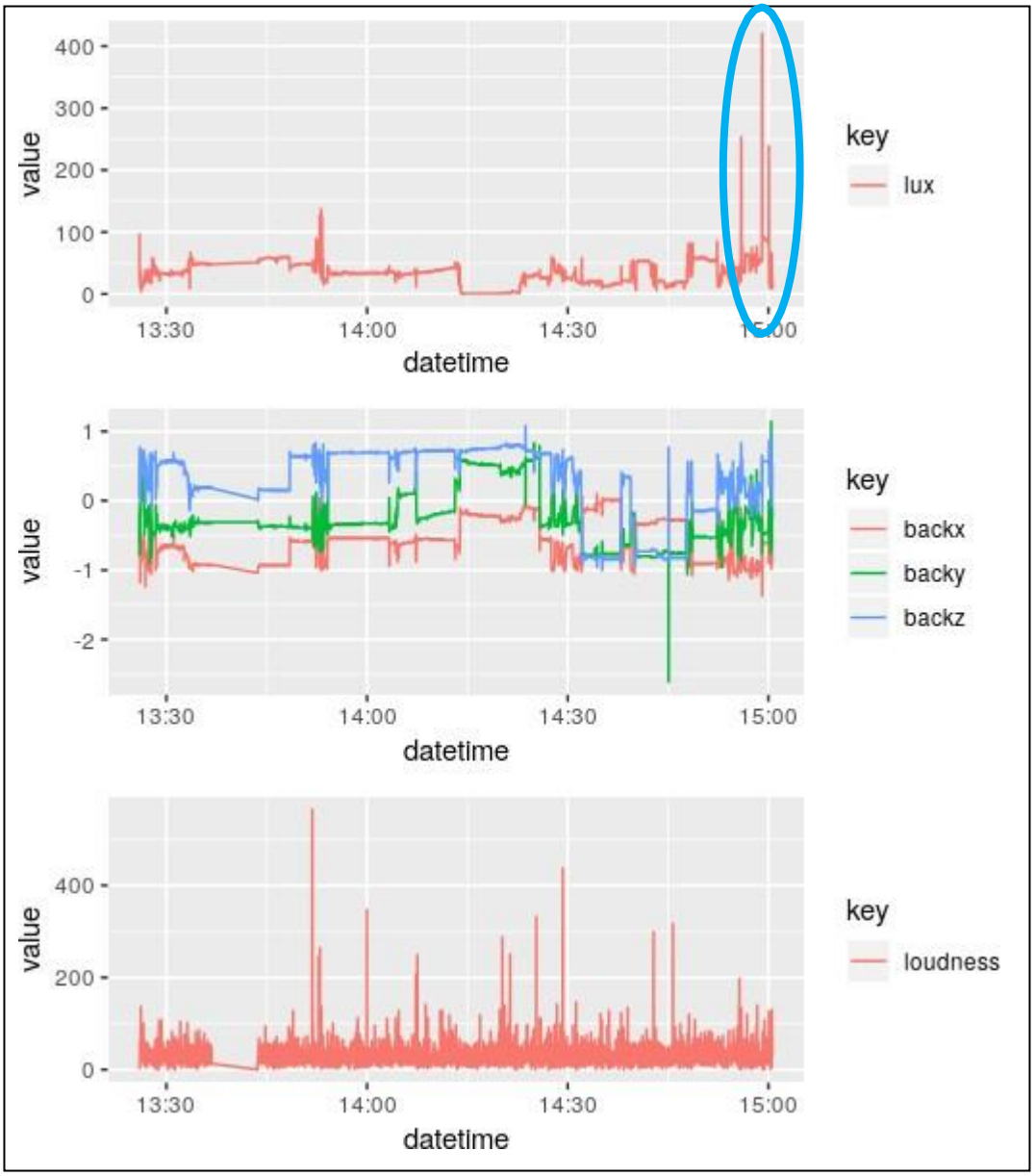


Figure 7: Participant D2, data collection session 1, part two. Graphs show light, back-mounted accelerometer, and loudness.

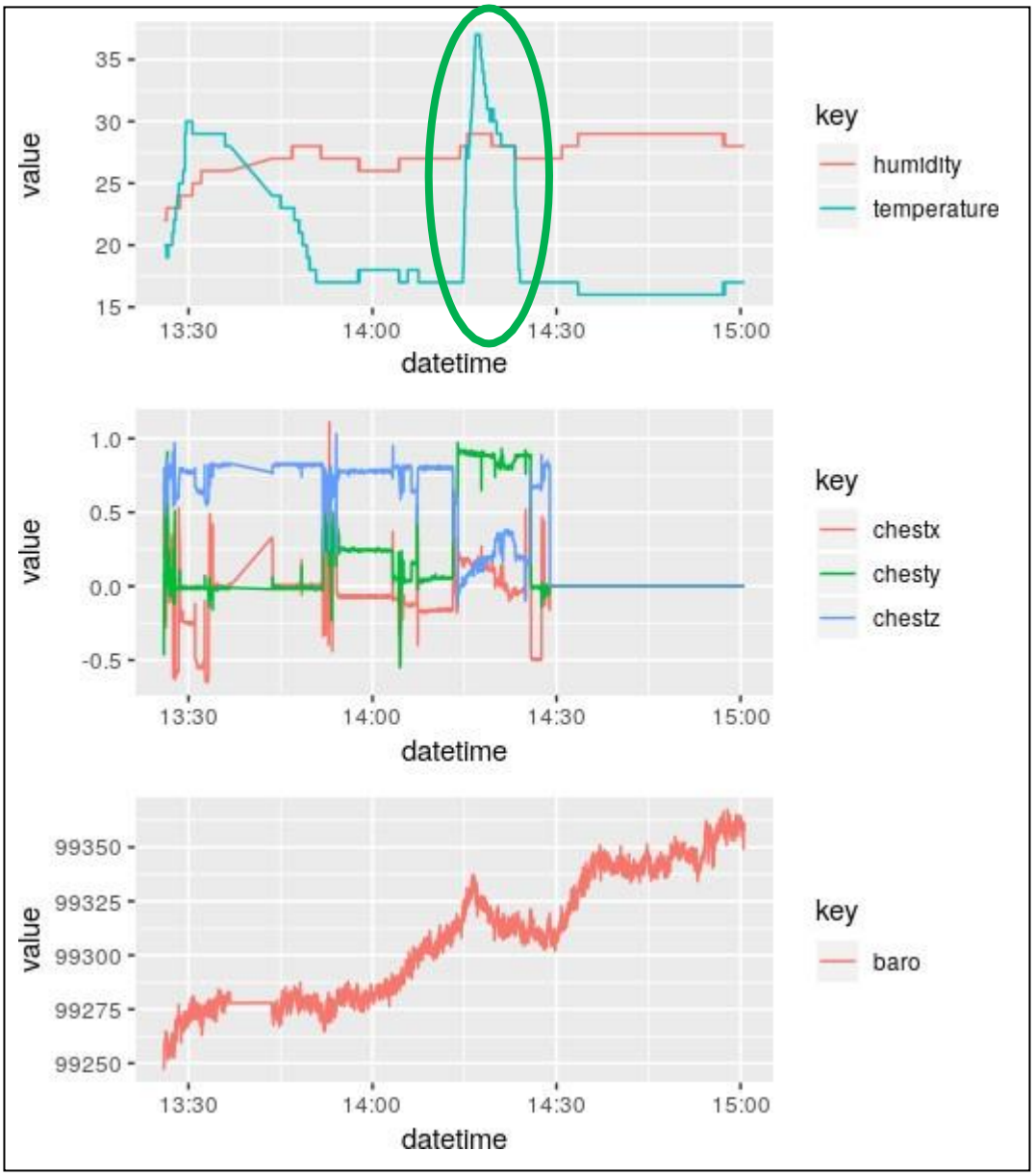


Figure 8: Participant D2, data collection session 1, part two. Graphs show temperature and humidity, chest-mounted accelerometer, and barometric pressure.

In the last session with D2 was during a separate, second visit was with a one-on-one with human service users. I wrote in my field notes I had to restart the sensor pack shortly after the beginning of this session due to technological malfunction. This can be observed in the

graphs as flat line shortly before the 13:45 time mark and is consistent across all six graphs, circled in red Figures 9 and 10 below. There is an additional technological error that can be observed in Figure 10, when the chest accelerometer ceased recording data for unknown reasons at the end of the session. This error is also circled in red.

In my field notes, I wrote that D2 seemed very tired upon my arrival. She was not enthusiastic about greeting me or seeking attention, stood in a relatively slouched posture, and preferred to be laying down and resting. D2's caregiver and handler, PD, noted that she wasn't eager to come to work that morning, likely because of an interruption in her routine. PD's partner was staying home that day when they would normally be going to work, and D2 had wanted to stay home as well. Nevertheless, I noted that D2 seemed quite engaged throughout the session, despite not getting up or moving around a lot.

These observations were all consistent with the sensor data. Lux and loudness remained relatively low throughout. There is very little variation at all in the values in the first and third graphs of Figure 9. The ambient temperature and humidity, illustrated in the first graph of Figure 10, remained consistent for a short time and then changed slightly during the session, with humidity rising and temperature lowering. Although the lines in this graph do show variation, the range of values measured is very small, as the range of the graph is only from 18 degrees to 24 degrees, and 18% humidity to 24% humidity. The barometric pressure increased gradually but within normal range, which is depicted in the third graph of Figure 10. The middle graphs of Figures 9 and 10 show the accelerometers data from the back and the chest where there are small peaks or variations in any of these lines, indicating that movement was minimal (disregarding the

technological malfunction at the end of the session shown in the second graph, Figure 10, which is circled in red).

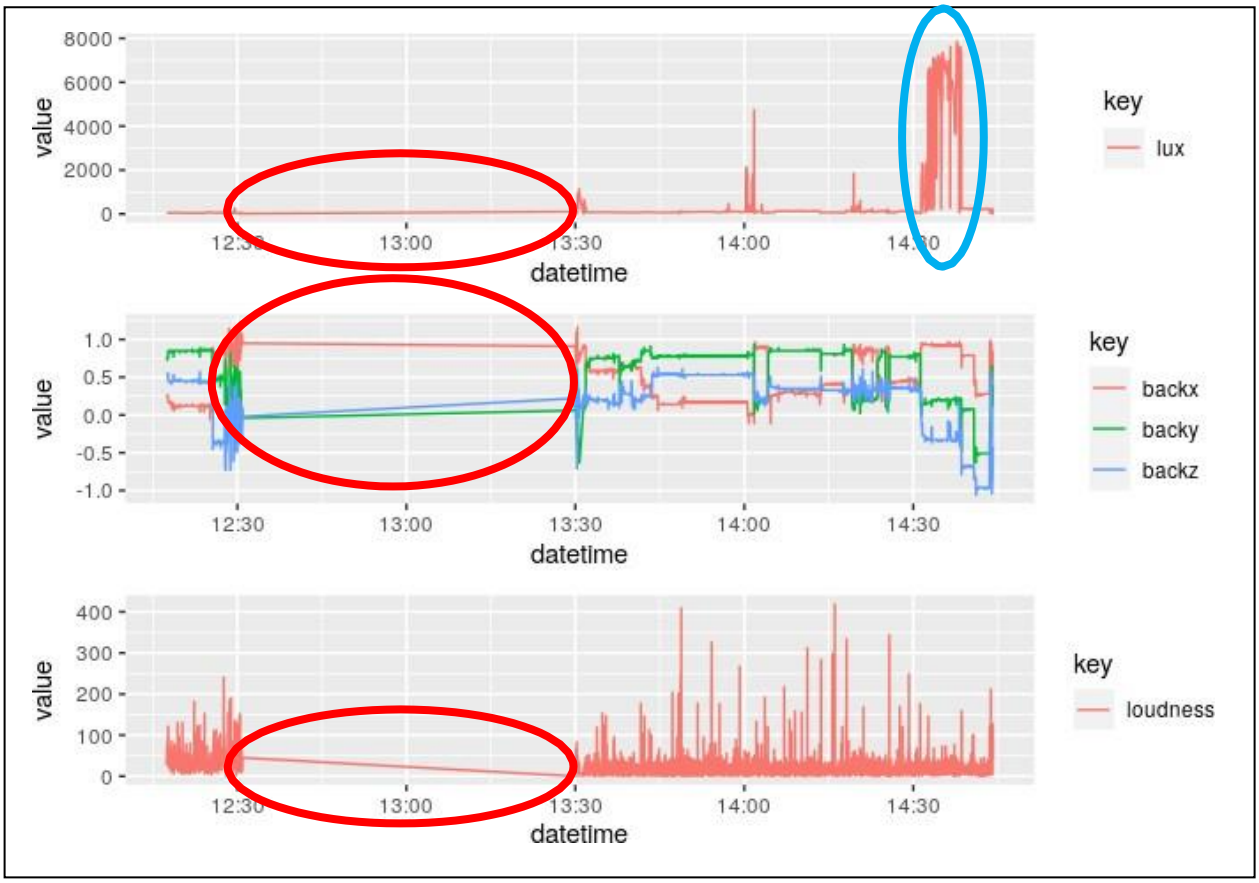


Figure 9: Participant D2, data collection session 2. Graphs show light, back-mounted accelerometer, and loudness.

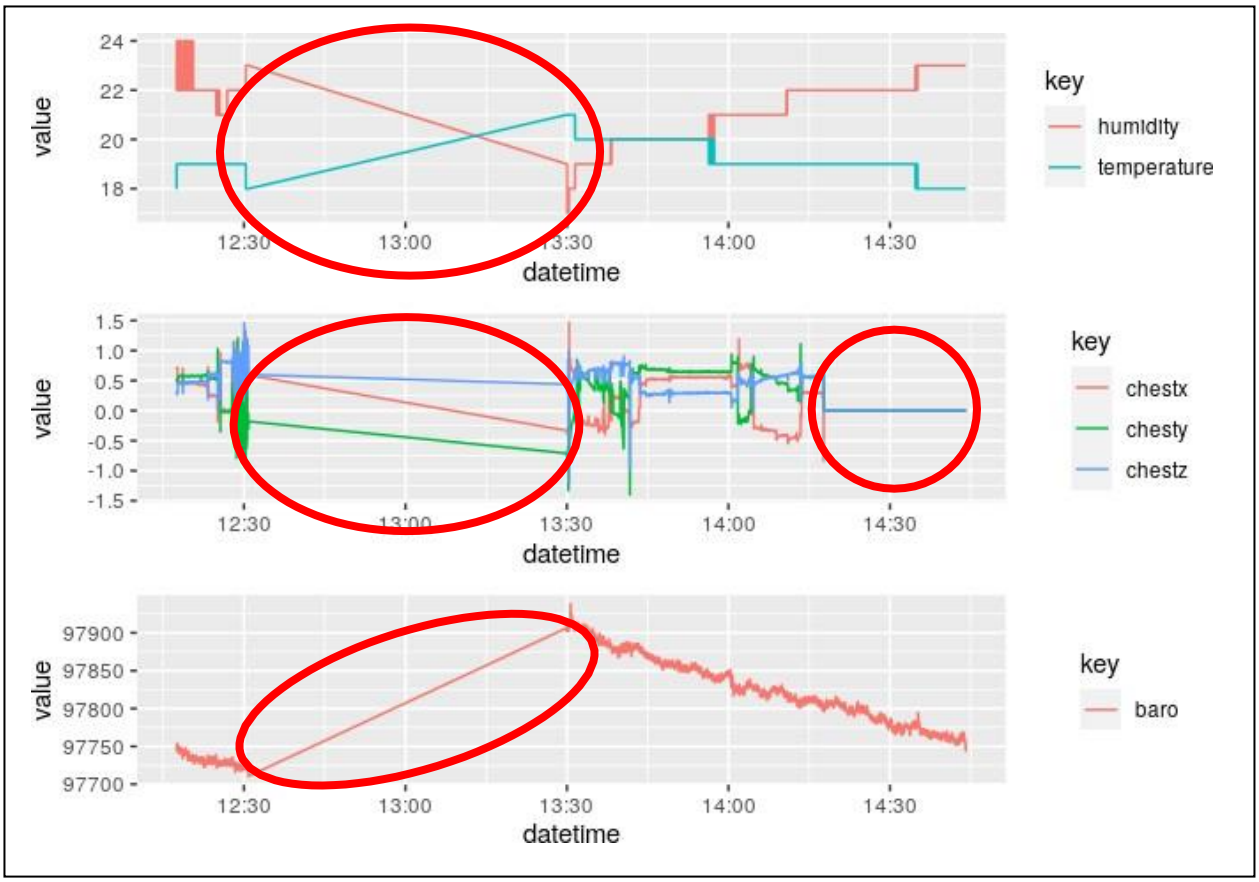


Figure 10: Participant D2, data collection session 2. Graphs show temperature and humidity, chest-mounted accelerometer, and barometric pressure.

From this data, it can be observed that D2 is quite consistent in their behaviour while working, regardless of environmental factors, such as temperature, humidity, and barometric pressure. On the other hand, the environmental factors that were able to be included in this study changed relatively little during data collection, indicating that D2's workplace is an environmentally stable location. Aside from some lighting changes when D2's caregiver turned on the overhead lights at the end of the sessions (indicated with a blue circle in Figures 5, 7, and 9) there is little observable environmental variation in her workplace that could impact D2 while

performing her job responsibilities. This data, while exploratory in nature, could be used to advise humans who work alongside D2 that she is generally consistent in her workplace performance when there is minimal environmental distraction. However, in order to make these kinds of predictions, future research to confirm the accuracy of this result would be required.

Findings: D3

Data was collected during two different sessions with participant D3 and is represented below in Figures 9, 10, 11, and 12. Some of the data from these Figures was unavailable for analysis due to technological difficulties encountered with the sensor package at the beginning of each sessions. Because the sensor package had been tested prior to arrival, there is a section at the beginning of each graph where it shows activity that was recorded, then there is a flat line in all the graphs in these Figures. The sensors begin to collect data around 14:10 (circled in red). It should be noted that these errors were due to the power to the sensors being turned on and then off, while the sensors continued to record data in the meantime. If this sensor package were to be used again in the future, it would be beneficial for a test feature to be added and programmed to avoid this technological error.

In Figures 11 and 12, which are the visualizations of the data from the first data collection session with D3, the data from the lux, loudness, and temperature sensors, as well as both accelerometers, all demonstrate periods of limited change and relative calm, punctuated by periods of increased movement, ambient noise, and variations in light and temperature as D3 moved throughout her workspace (these periods circled in yellow in Figures 11 and 12).

Specifically, the first graph in Figure 11 shows light level, with peaks in value when the participant was in a brighter space identified in yellow. The yellow circles in the second graphs of both Figures 11 and 12 indicate periods of increased movement. Aside from the periods that have been identified with yellow circles, the graphs in Figures 11 and 12 show relatively little variation in value, and the lines themselves are fairly flat. The periods identified with yellow circles are variations in value across measurements, including movement. What this indicates is that that environmental factors (light level, temperature, and humidity) changed in accordance with D3's movement through different spaces.

At the beginning of the first session, the sensors show that D3 was relatively sedentary (14:27 and 14:45, in Figures 11 and 12, circled in blue). I noted in my field notes that D3's caretaker was completing paperwork at this time. During the rest of the session, D3 was active, moving about the space, and visiting with service users. A sharp peak can be seen in the third graph of Figure 11, circled in green just after the 14:15 time mark. According to my field notes, this peak was a measurement of D3 barking. The humidity, the red line in the first graph of Figure 11, and barometric pressure, the bottom graph of Figure 12, fluctuated normally during this visit, and did not appear to affect D3's behaviour in any way observable to me. Based on my own experiences with dogs, particularly in working environments, some dogs are very sensitive to barometric pressure changes, particularly if they are fearful of certain weather conditions, such as lightning or thunder. In future research, it would be interesting to recruit dogs who may experience such issues to probe whether or not these conditions affect them in the workplace, and what best practices might support them during these challenging times.

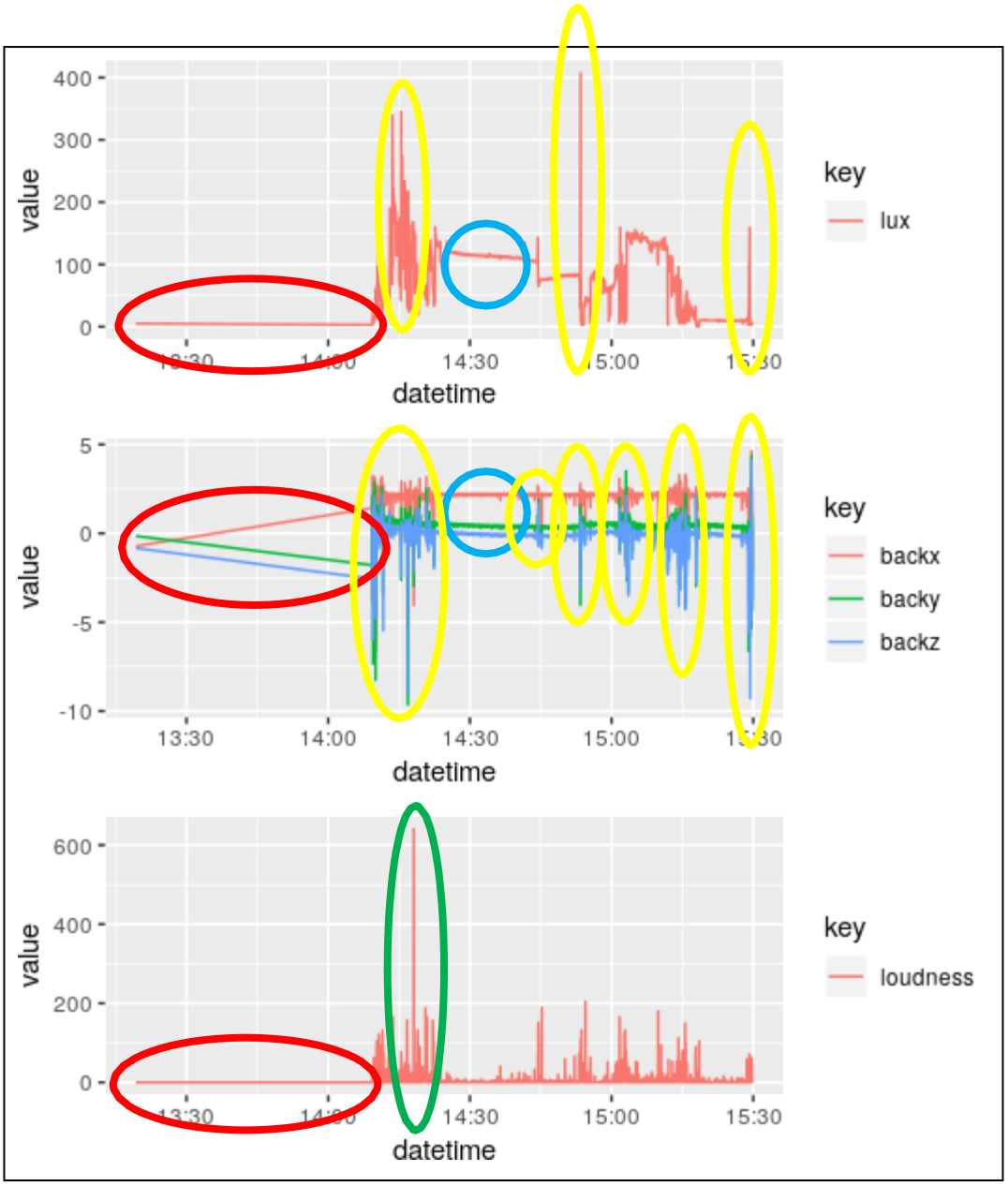


Figure 11: Participant D3, data collection session 1. Graphs show light, back-mounted accelerometer, and loudness.

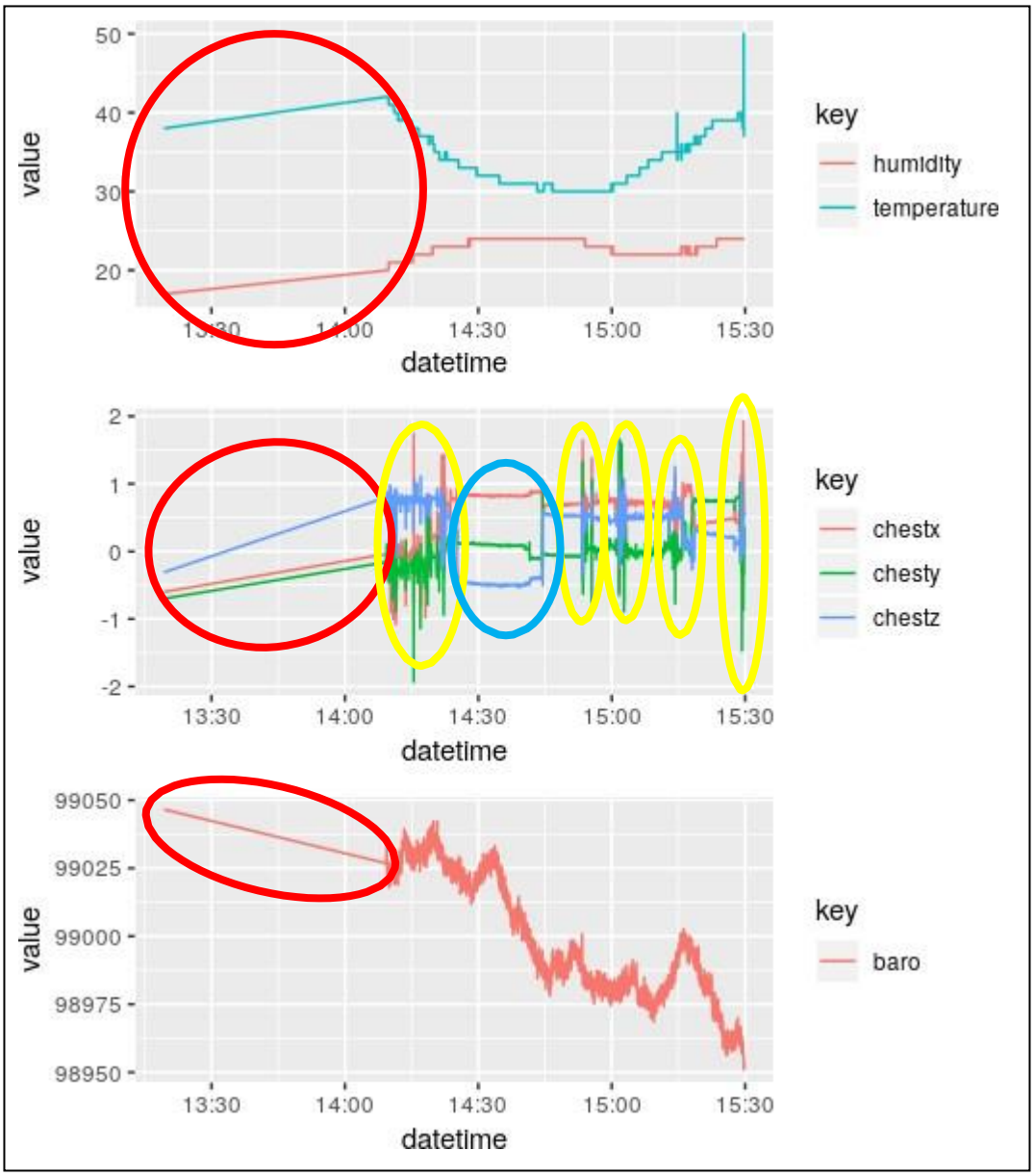


Figure 12: Participant D3, data collection session 1. Graphs show temperature and humidity, chest-mounted accelerometer, and barometric pressure.

The second session with D3, held on a separate occasion from session 1, was very similar to the first. Looking at the graph data (Figures 13 and 14) collected from this session, the graphs are almost the same as the first session (Figures 11 and 12). Flat lines are shown across all

graphs when the sensor package was not on to conserve battery between sessions (Figures 13 and 14, roughly from 14:40 to 15:00 and 15:50 to 16:10, circled in red). Sharp peaks in loudness are obvious in the last graph of Figure 13, when D3 was barking excitedly (according to my field notes), and these have been circled in green. I noted that it was not always clear to me what provoked her barking when I was observing her. Her caregiver did not indicate that the barking was out of character for her.

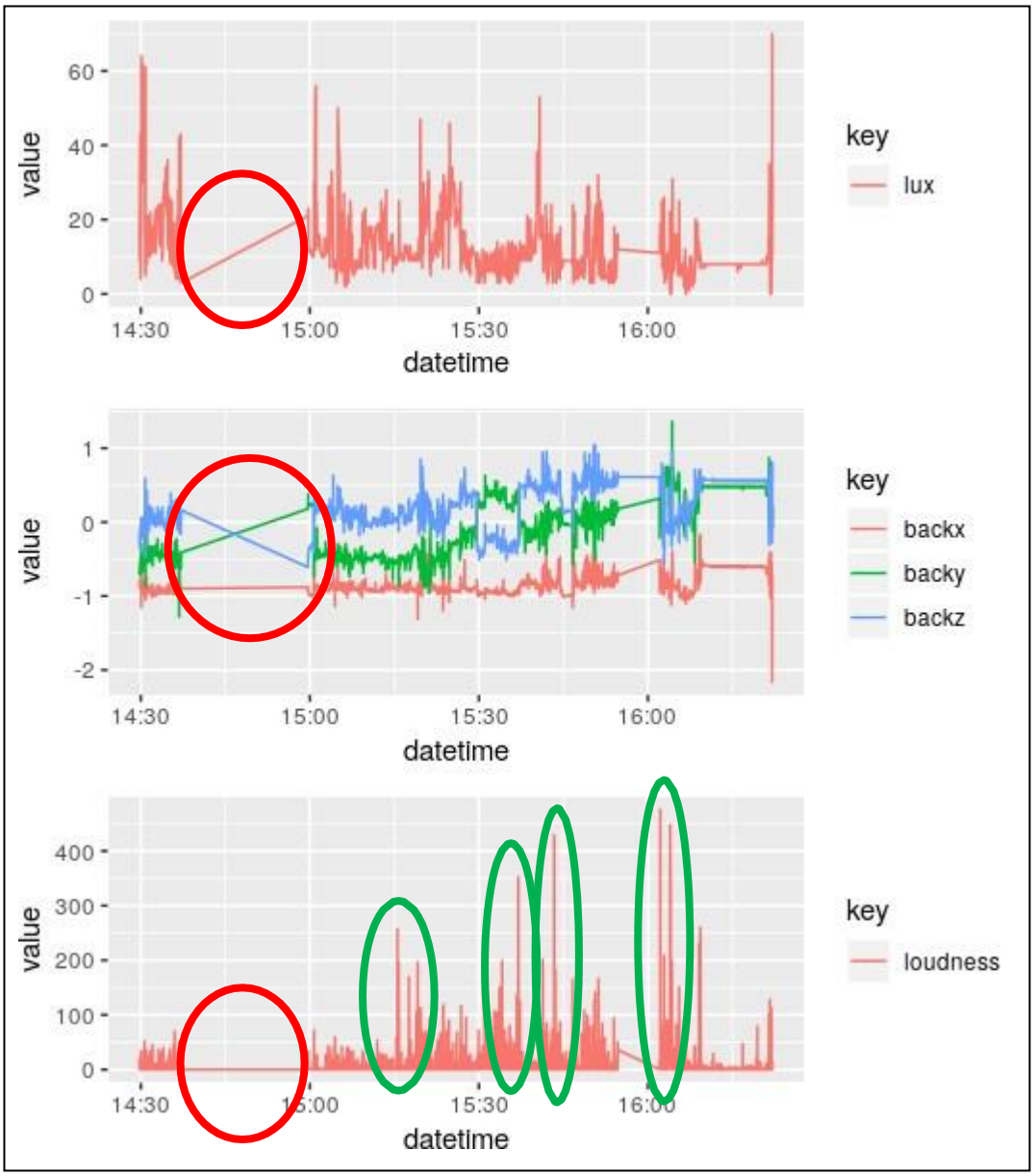


Figure 13: Participant D3, data collection session 2. Graphs show light, back-mounted accelerometer, and loudness.

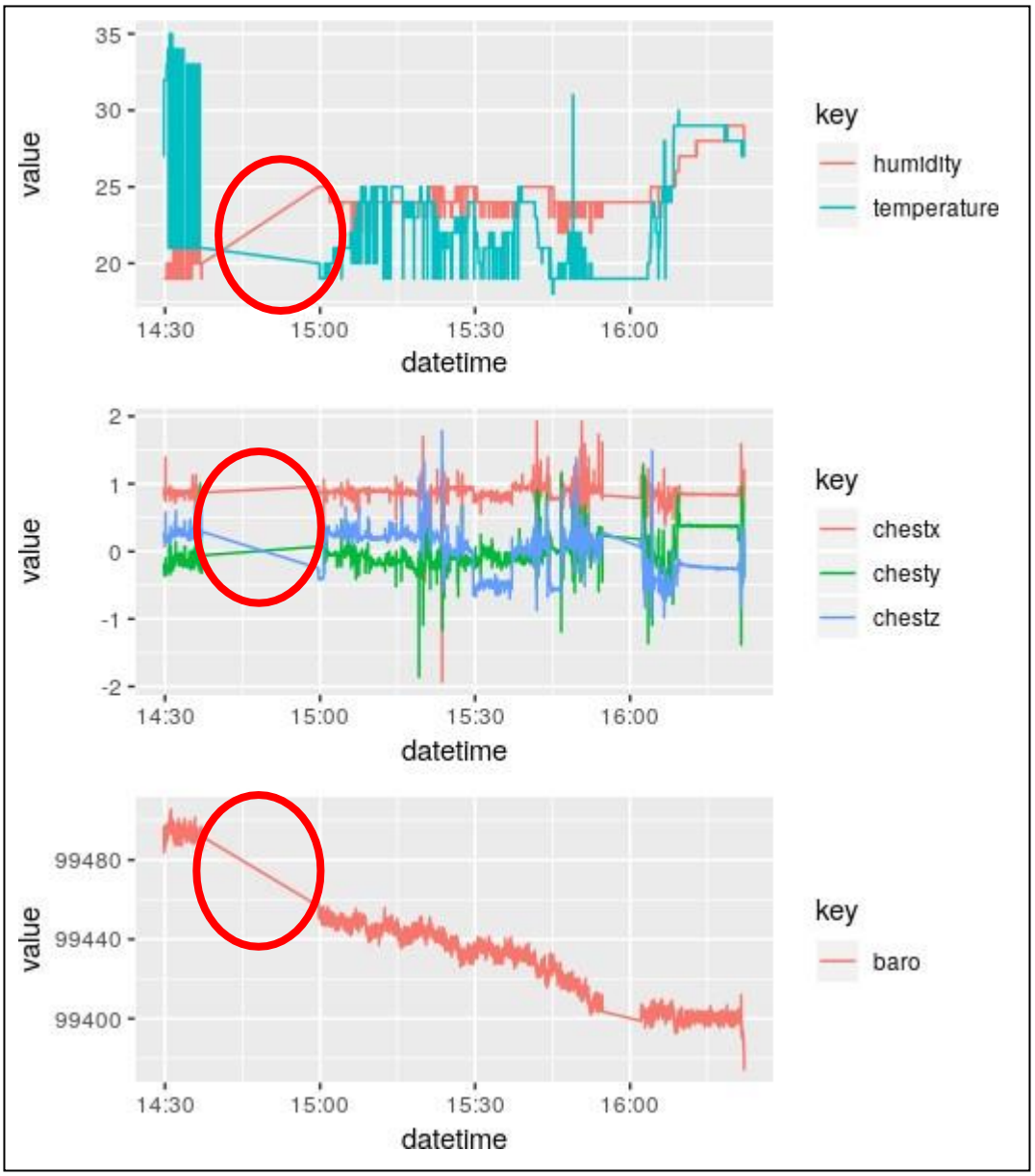


Figure 14: Participant D3, data collection session 2. Graphs show temperature and humidity, chest-mounted accelerometer, and barometric pressure.

While the data graphs from D3 are quite different from D1 and D2, D3's behaviour was consistent across all sessions. D3 participant was more physically active and vocal within the therapy session and space in which the dog worked than either D1 or D2 had been. The barking

demonstrated that D3 was excited to work, this was exhibited by D3's behavior: sitting and standing in upright postures, with muscles engaged rather than relaxed, offering focused eye contact with all humans present, and positive reactions like wagging and perking her ears forward to her surroundings and humans in the space. D3's work environment was more spacious and had more variation in terms of environmental factors, including light levels and temperature, than the work environments that D1 and D2 had access to during my data recording sessions with them.

A factor which may have impacted the findings in this section is that D3 was the only OTH animal participant in this study who appeared to have some hesitation about wearing the sensor package. This was noted both by me and her caregiver, the social worker whose practice she is involved in. At no point did either of us feel concern, however at the beginning of the first session with D3, she was very engaged in sniffing and examining the harness and sensor package prior to wearing it. She appeared very alert, in an upright posture with engaged muscles and her ears fully engaged throughout her examination. When her caregiver initially put the harness onto D3's body, she did avoid wearing it on the first attempt. As a response, she was given more time to examine the harness before putting it on and was verbally encouraged when she allowed us to put the harness around her body. D3 was one of the only dogs who did not typically wear a harness of any kind in day-to-day life. While most dogs did look at and smell the harness when it was initially produced, D3 was the only OTH participant who demonstrated any hesitation or curiosity about the package that I would have described as nervousness or negativity. She did not display the same reluctance at the beginning of my second session with her, although she still spent some time examining the harness before putting it on for the second session.

Findings: D4

I was only able to organize one data collection session with D4. Below are the six graphs illustrating the data collected during this session (Figures 15 and 16). The environment in which D4 worked in was a rural residential facility with teenaged service users. This was a long visit, and the sensor data had few technical errors and was easy to interpret. This was because this session was the final time the sensor package was used during this study, so as a researcher, my ability with the technology was honed at this stage.

D4 was the only small breed dog that I had to adjust the sensor package to work for her physique. To make adjustments, I extended the cables that connected the battery and controller to the rest of the sensors, so that they were held by the handler at the end of a leash and connected to the harness, rather than worn by the dog with the rest of the devices. In my field notes, I wrote that D4 was "super engaged, most active and expressive of all the dogs I've met".

The graph in Figure 13 shows that light was generally low throughout the session. This was the case during many of my data collection sessions with various participants. At this stage, I am unable to draw meaning from this with regards to the wellbeing of OTH animal workers. However, it is my assumption that because social work settings are often lit by harsh fluorescent lights due to cost efficiency and widespread use in older buildings, light levels are sometimes dimmed by practitioners in an effort to create a calm environment. As someone with sensory sensitivities, I certainly appreciated this, and so I can assume that some dogs involved in these workplaces may have experienced a benefit from this practice as well

The residential facility was mostly illuminated with natural light. The value two spikes (circled in yellow, the first graph of Figure 15) occurred when D4 entered two different spaces and her caregiver/handler turned on overhead lights, presumably for my benefit, as a newcomer to the space. This activity was described in my field notes.

The noise levels (Figure 15, third graph) were variable throughout the visit. These variations are represented by peaks in the red line which represents the data recorded by the loudness sensor. This data is congruent with my experience and what I had recorded in my field notes. D4 spent the morning working in one-on-one sessions with teenaged service users, and the social worker and I chatted throughout the visit. There was little variation in humidity and temperature, and the barometric pressure fluctuated within a range that is comparable to that observed in other sessions with other participants (Figure 16, third graph). D4's movement as recorded by the accelerometers are illustrated in Figures 15 and 16, the second graphs in each. The peaks and variation in values in these graphs tell me that D4 was quite active during the session. Rest periods when D4 was laying in her bed or listening while service users spoke with the service provider are documented by the primarily flat sections of the graphs (Figures 13 and 14, second graph in each, circled in black).

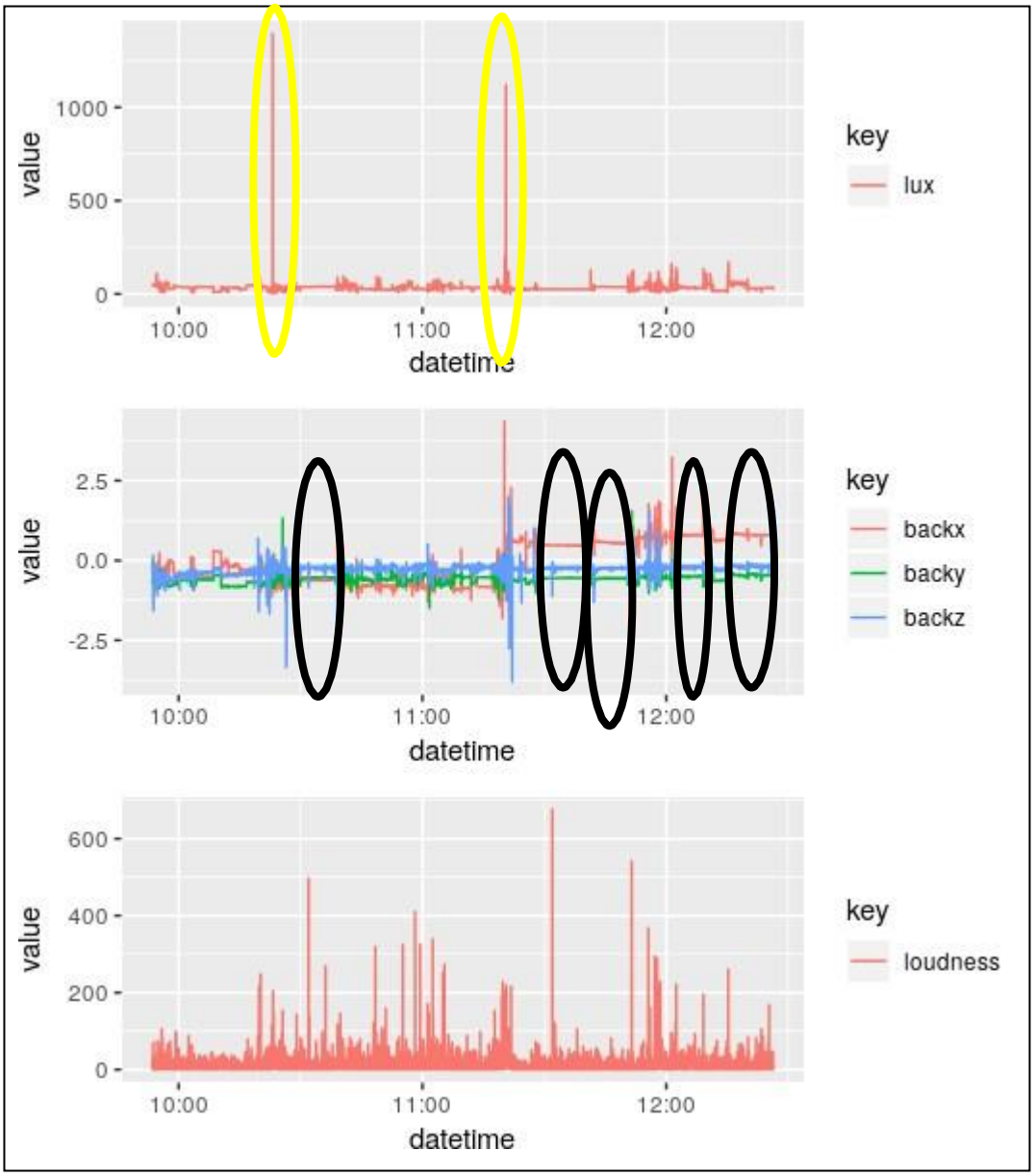


Figure 15: Participant D4. Graphs show light, back-mounted accelerometer, and loudness.

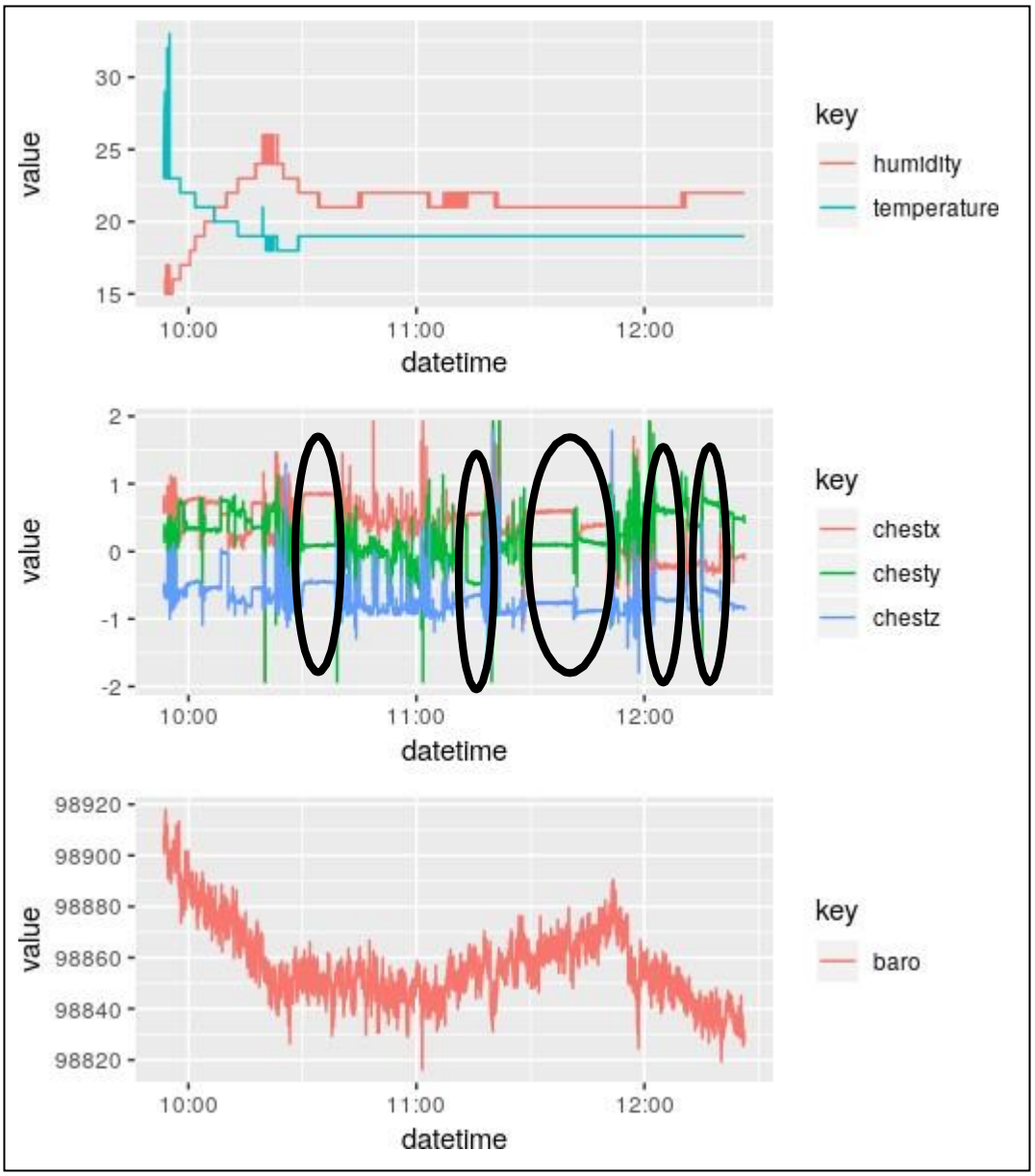


Figure 16: Participant D4. Graphs show temperature and humidity, chest-mounted accelerometer, and barometric pressure.

The graphs as well as my observational field notes show that D4 is a highly active dog in comparison to the other dogs involved in this study. During my observations and the time that I spent collecting data with D4, she spent less time than other participants sleeping, lying down or

resting than other participants in the study, who were at rest during the vast majority of their sessions. D4's brief instances of rest were much shorter and less frequent.

In my notes, I wrote that D4 often walked or jogged around their workspace either seeking attention or observing the humans. The workspace in which D4 was in was a large, multi-room therapeutic space. This room was inside of an older building in a rural area, therefore the environmental factors such as temperature and light in this space were the most closely comparable to natural levels, out of all of the spaces I visited in this study. I also observed a similar level of temperature and light in the space with D3. The data from the sensors provides a more precise view of what the dog is experiencing in their work environment than using field notes alone. In the future, similar data may be useful to practitioners who are planning to integrate OTH animals into their work environments, in order to ensure that they have the most ideal, stable conditions possible for dogs to work within. It may also be useful for caregivers experiencing behaviour challenges with OTH animal coworkers in attempting to triage potential causes or correlative factors.

With hindsight, it is possible that the differences in behaviour between some of the dogs in their working environments could have been predicted. While D1 and D2 were professionally trained therapy dogs working in regulated institutional environments, D3 and D4 worked in non-profit organizations, and were trained by their caregivers. Through this study, I found that professionally trained dogs were much less active and expressive during their work, whereas owner-trained dogs moved around more and had more variable behaviours, like barking and play behaviours (i.e., running, play bows, retrieving toys, offering obedience responses). These observations, documented in my field notes, were confirmed by the sensor data, in particular the

data drawn from the accelerometers that offered an outside perspective on the level of physical activity of the canine participants, and the loudness sensor, which at times was useful in documenting OTH animal vocalizations during data collection sessions. This data and my observations may be an indication of the impact of positive reinforcement training on the perceived personalities and workplace behaviours of working dogs in a social work environment. It is likely not coincidental that the professionally trained dogs tended to work in more regulated environments than owner-trained dogs.

Sensors: Summary of Findings

This portion of my study addressed one of my main research questions: how can the experiences of dogs in social work practice be documented? I was inspired by the Quantified Self (QS) movement (Swan, 2013) and seminal work in cognitive ethology that uses multimedia analysis in research with OTH animals to explore how emerging, accessible, non-invasive digital technologies that have not been used in social work research with OTH animals before might be employed to collect data about dogs' experiences. I imagined that if functional, the process could be replicated in the future, and the data collected could enhance what could be collected using more traditional critical ethnographic methodologies.

This was a creative, exploratory project as part of a research-creation methodology that I had the opportunity to develop through a digital scholarship fellowship. The methodology itself allowed me to cultivate digital literacy through experimentation with forms of technological

praxis as non-traditional scholarship. This enabled me to explore the question of how we can develop insight into dogs' experiences working alongside social workers starting from a technologically mediated, non-invasive approach.

Once I had built my capacity to a place where I was able to understand the components of the sensor package that I had envisioned, program them and troubleshoot, and download the data that they had collected, I was supported in cleaning and visualizing the data by John Fink and the SCDS. The graphs of the preliminary data that resulted from this visualization process were included and interpreted in this chapter.

The sensor package that I developed, built, and operated, as a social sciences researcher with very limited technical experience, was able to successfully collect data about the canine study participants' movements, vocalizations, and reactions (or lack thereof) to environmental factors such as temperature, humidity, and light level. I cross-referenced them with my observational field notes and other ethnographic texts (primarily interviews), and the data proved that it could be useful in confirming the findings, as well as challenging my own perceptions as a researcher. The primary finding, therefore, is that this technology does have the potential ability to be employed by someone with limited experience to gather data that can be visualized and analyzed, and that it may enhance more traditionally gathered qualitative data.

In attempting to craft a more complete understanding of an OTH animal's experiences in AAI in social work, there is potential in the use of non-invasive, affordable, emerging digital technologies in research, and it should be explored more thoroughly in the future.

Discussion

Introduction

In this study, I have used critical ethnography and research-creation methodologies to explore the following research questions: (1), How can the experiences of dogs in social work be documented? (2), Why is it important to document these experiences? (3), How are dogs experiencing their involvement in social work practice? (4), What knowledge do the social workers who work with dogs have about involving these animals in social work? These questions are focused on dogs working alongside social workers, and I hope that I the future, the findings may be extrapolated to form conclusions about other OTH working animals in therapeutic contexts. It should be acknowledged that from the outset, it was always already impossible to fully measure or understand the experience of an OTH animal as a human researcher, but I hope that this research can be used in advocating for the wellbeing of OTH experiences in interspecies work environments. To move toward a socially just and decolonial approach to social work practice, we must acknowledge that the wellbeing of OTH animals and human service users and providers are intertwined, and on a macro level, that the wellbeing of human and other living beings are interconnected more broadly.

The next three chapters of the dissertation (the discussion, limitations, and conclusions chapters) comprise the discussion section of my IMRaD structure (George Mason University, 2021). This is the final section, in which I will offer my insights into the data based on the theoretical perspectives which have influenced the study. What objectives were achieved, what limitations were reached, and what the implications of this study are will all be discussed.

Data Sources and Generation

For this project, I took a politicized stance that privileged a non-anthropocentric and decolonizing perspectives to the best of my ability. Influenced by decolonialism and posthumanism and acknowledging OTH animals as knowers and therefore sources of data themselves, it was crucial to invite animal involvement in the research project as much as possible (John Dayle, 2019). Unlike previous research done around issues involving OTH animals in social work (e.g., Balluerka et al., 2015, Becker, Rogers, and Burrows, 2017; Burgon, 2011; Connell et al., 2019; Cooke and Farrington, 2015; Frederick, Hatz, and Lanning, 2015; Kloep et al., 2017; Machová etal., 2018; Pitheckoff, McLaughlan, and Medeiros, 2018), I attempted to invite the dogs into the research process as full participants, by fully engaging with notions of informed consent, realizing the inherent limitations of the study, and collecting field notes and sensor data to accompany the interviews that I conducted with the humans involved in their lives. Just as subjects are co-created through their relationships with one another (Haraway, 2003), this study, the data collected, and the findings that emerged, would not have been possible without the participation, both direct and indirect, of OTH animals.

As I wrote in my introductory chapter, this study was inspired by my experiences of sharing my life and work with OTH animals from a very young age. I will discuss in this chapter how I have also had technologically mediated relationships with OTH animals throughout this time. OTH animals, specifically dogs, were invited and included in this research project from its conception as well. Using research-creation methodology, I collaborated with my own dogs at the time, two adopted greyhounds named D and Boom, to develop the sensor package and harness that were used in the study (McMaster University, 2020; Appendices E and J). This

involved literal years of spending time together, playing, building, developing policy that would allow my dogs to come into makerspaces with me, and thinking. D and Boom were easily as instrumental to my thought process in developing this study and the sensor package as any academic collaborator.

In the recruitment phase of the study, no human participants were involved unless they were directly connected to a canine participant in a caregiver, co-worker, and/or service user capacity. Interviews (see Appendix C for the interview guide) with human participants were focused on the experiences of the OTH animals who they worked with, and ethnographic data was additionally collected in collaboration with the dogs using the sensor package and observational field notes. Unfortunately, I was unable to involve the OTH animal partipants directly in the data analysis and dissertation writing phases of this study, however that hardly means that these processes were without anti-anthropocentric influence. Throughout these stages of the process, I often had one of my formerly feral Maine Coon cats, Whisper, draped across my arms as I looked over his back to see my laptop screen, and always has my work been punctuated by dog walks. Throughout this part of my dissertation process, I also cared for D in the last stages of her life, as my family provided palliative care when she was diagnosed with a terminal nerve sheath tumour. She passed away before this project could be completed, and I spent the majority of my writing process heavy with grief following her loss.

In comparable research in the area of social work and animals (cited in the first paragraph), the data collection processes occured solely between the human researcher and the human participants in the study. Surveys or an interview guide are used to try to capture data about human service users' experiences engaging with OTH animals in AAI in a social work setting.

The animals themselves are viewed as part of the intervention, comparable to an instrument in a music therapy setting, as an example – they are objects, not subjects. In this study, I endeavoured to break open the colonial concept of the research participant and invite OTH animals to be part of the data collection process. I used methodologies that would allow data collection strategies outside the bounds of human language for OTH animals to engage with. As such, there are three main categories of data sources for this project: the OTH animals involved in service provision; the humans involved in the lives of OTH animals; and the activity of service provision. The use of emergent digital technology and research-creation methodology to enhance the critical ethnographic texts that were among my data sources allowed me an entry point into this study through technologically mediated relationships with the OTH animals involved. The research-creation process allowed me to operationalize a transhuman mode of communication with OTH animals through data collection about their embodied experiences of work, translated through the sensor package, which can be viewed as an extension of myself or equally as an extension of the dogs involved in the study, as cyborg researchers and participants (Roden, 2015). Through this approach, my OTH participants and I were able to create a productive affective relationship that unique in social work research (Wilson, 2008).

In doing so, I was able to respond to my first two research questions. 1, biometric and environmental sensor technology is one way to document the partial experiences of dogs involved in social work practice. 2, it is important to explore new ways of documenting these experiences in order to make social work research more accessible to marginalized researchers, and because despite our best intentions in the social work field, it is obvious that we do not yet understand the effects that our work has on OTH animals who we ask to support it. For me, this question became particularly salient when I was writing this dissertation and also coming to

terms with the end of my dog's life – a dog who had been deeply involved in some of my social work practice throughout her life. When she died and I reflected on our time together, I had no way of knowing in what ways I had contributed to her comfort and wellbeing, and in what ways I may have exacerbated her health issues. Whether or not this is something we can ever truly know, I am unsure, but as someone who cares deeply about the lives of OTH animals, I hope that through engaging in research like this study, we will be able to improve the experiences that they have if we are to ask them to contribute their labour to our practice.

Mason (2002) asks researchers with regards to data sources, "Where is it 'located' and therefore from which potential sources can I generate knowledge of it?" (p. 53). I am interested in the affective, embodied, relational experiences of OTH animals involved in social service provision. Social work is a humanist field of practice focused on human subjects, their wellbeing, and social justice. Therefore, by taking a non-anthropocentric, posthumanist approach in this project, the work that I have done is politicized.

Intentionally privileging a non-anthropocentric perspective, a controversial political choice in a scholarly and professional field which is largely human-focused, poses challenges with regards to the research process itself (Wilson and Barker, 2003). Unlike most humans involved in social sciences research, OTH animals are not able to describe their experiences through traditional qualitative data collection means. Because of this, social scientists who are interested in working with animals are forced to use methodologies that may not be considered traditional for qualitative research (Lund et al., 2006). In this study, that meant stepping outside of my field to have one foot in sociology, with a focus on critical animal studies. It also meant reaching across disciplines to digital scholarship, in order to explore research-creation methodology as a possibility for co-creation of knowledge alongside OTH animals. I utilized

emergent technologies as an extension of the researcher to allow the OTH animal participants in this study to share research data with me through their embodied experiences (Haraway, 2008; Pick, 2011; Roden, 2014).

One of the tensions that I wrestled with in this project, including both human and OTH participants as data sources, is to what degree the data collected from human sources would by default overshadow the data collected with OTH animals in the minds of readers who are accustomed to an anthropocentric mode of thought. Through my review of the literature, I found no other studies in which researchers have navigated this. My intent was to find ways to avoid privileging an already over-valued perspective of anthropocentrism, which some scholars have described as "the central organizing principle of western social work" (Hanrahan, 2011, p. 278). At first, I had considered conducting this study without inviting in the voices of the humans involved in the lives of the OTH animals that I would be working with. During my Ph.D. course work I took a research methodology course, during which I conducted a pilot study on the representation of the perspectives of animals. This pilot study was intended to explore an issue that we, as students, could encounter in conducting our dissertation research. For the study, I interviewed a small sample of participants who all worked with and represented OTH animals in their research. Considering the feedback from Dr. Chris Sinding (my supervisor on this project) and the valuable and interesting data that I collected in this pilot, I reconsidered my decision to exclude human voices completely on the grounds that the perspectives of humans who have long term relational experiences with the OTH animals were valuable resources in providing a picture of what an OTH animal's experience of service provision is. I applied this logic in designing my dissertation project, and ultimately decided that I would include human participants as well as OTH animals in this project, because excluding human voices would not necessarily recognize

the interdependent nature of our social lives with those of OTH animals, particularly in interspecies environments.

Mason (2002) also asks, "What are the ethics of using these data sources?" (p. 53). In trying not to concede to a binary conception of ethics in which there is only right and wrong, my consideration with regards to ethics is recognizing a tension in reconciling all the aspects of my research with the context of being involved in the scholarly critical animal studies community, as well as in liberationist activist communities. There is an intellectual grittiness in this tension that was both complicated and productive to navigate over the course of this study (Clarke, 2004). There are no concrete guidelines that exist for how to go about working with animals in a way that is ethical because of the novelty and marginality of research of this nature within the social sciences that have always been exclusively anthropocentric. In engaging my analytical lens, muddying the waters of my research with conversations around consent, invasiveness of techniques used, and attempting to involve OTH animals as full research participants, my research moves away from traditional, anthropocentric approaches.

Interpretation of Findings

In this study, I used critical ethnographic, and research-creation approaches to explore four central research questions through an analytical lens using decolonial and posthumanist theoretical frameworks as its basis. A decolonial framework supports the humility of allies to Indigenous peoples in undertaking the responsibility to think critically and learning from the experiences of subjugated people and OTHs under colonialism and cultural imperialism. It is a framework that engages with Indigenous knowledges and their keepers, who provide unique

insight, as the originators of knowledge regarding the natural world and OTH animals, from the explicitly anti-anthropocentric starting point that animals are, themselves, knowers (John, 2019). More importantly, a decolonial framework involves moving from theory to action in an effort to promote social justice.

Posthumanism is often falsely positioned as diametrically opposed to decolonialism, which engages with critical thinking (Corman and Castricano, 2016). Posthumanism deconstructs the notion of the human as a discreet category to understand the moral and ethical question of the subject. As composite beings, the bodies of animals have been optimized and hybridized, our intra- and inter-personal relationships mediated through technological means in a form of cyborgism (Brown, 2015; Rose, 2007; Haraway, 2008). Posthumanism recognizes that animals may be constructed as subjects rather than tools and recognizes the importance of considering technological developments and impacts on the notion of the subject (Taylor, 2017; Oliver, 2016). This is congruent with a decolonial framework, and with many Indigenous knowledges.

Dogs' Personalities and Skills While Working

A huge range of personality traits were attributed to the dogs that were involved in this study by the participants interviewed. The most striking finding regarding the personalities of the dogs was that despite the wide range of attributes embodied by the dogs, every participant who worked with a dog was confident that their dog was the perfect personality fit for their work. These sentiments were echoed confidently in participants' views on dog breeds, with each participant defending their choice of breed, and many justifying its superiority over other options

available when questioned.

Through a decolonial and posthumanist lens, species categories cannot be seen as discreet (Derrida, 2008; Corman, 2012; Braidotti, 2013; Harrod, 2000; Hogan et al., 1999, Hornberg, 2013). Naisargi (2014) deconstructs even the binary between thinking that humans and OTH animals are either the same, or they are not, and introduces the ideas of activist theorists who speak about the fluidity of human and animal identity. As I wrote in my findings chapter, human participants in this study defended their choice of breed of dog for the work that they are engaged in, and many justified their breed's superiority over other options. Given the precariousness of even the notion of species when looking through my analytical lens, the level of discrimination that the participants in this study leveraged based on something as deeply socially constructed as breed troubled me.

In addition, I observed that specifically with the dogs who I visited who were trained by NSD, participants noted that the dogs seemed quite subdued, and that was congruent with my observations and the sensor data. It appeared that this behaviour must be reinforced in training, since it was consistent across participants, regardless of breed, workplace, etc. It was quite the opposite with the dogs who were not trained by a professional organization, those who would otherwise be described as companion animals or pets. The bigger concern for their caregivers was that their dogs would jump, vocalize, or be otherwise offensive. Despite wide variations in approaches to training, all of the dogs' suitability for their work in social services was evaluated through ananthropocentric lens that centred the desires and standards of the humans who they worked alongside.

The training and breeding of the NSD dogs is much more institutional and formalized than any of the other dog participants encountered in this study, whom were selected from

shelters or breeders and trained by their owners. In most (but not all) cases, they had been evaluated for therapeutic work by the St. John Ambulance therapy dog program. The dogs involved with NSD tended to work in higher liability settings, the institutionalism and formality mirroring that of NSD itself. Yet, I reiterate: all the practitioners who participated in this study, regardless of the breed or training experiences of their dogs, were of the opinion that the dogs were perfect for the work they were engaged in. In that case, why are the NSD dogs perceived as more qualified or more reliable in the eyes of formal organizations? These are discernible tiers of perceived legitimacy within the field that are constructed purely around colonial ideals. From a decolonial perspective, the idea that humans should have control over the lives and bodies of the other animals who they work alongside is counterintuitive. Many cosmologies see all lives as being a part of a web of interdependence, and some highlight that humans are deeply dependent on other lifeforms for learning and survival (Castricano and Corman, 2016; Fawcett and Johnson, 2019; McKibbin, 2019a; White, 2019). If social work were to approach our collaborative therapeutic relationships with OTH animals from a humble, decolonial point of departure, our practice would look very different and in that we might find great potential for justice. Rather than focusing on using positive reinforcement training to shape the bodies, personalities, and skills of the dogs who we purport to work with, I find myself wondering what might come of allowing relationality and reciprocity to play a greater role in our practice, and what service users and providers might be able to learn from dogs, rather than vice versa.

The range of abilities and skills that dogs were expected to have in their roles varied across their work setting and the responsibilities held by the social workers who they worked alongside. It is difficult to encapsulate the job description of a “social worker” in the broadest sense of the term, and similarly, it is difficult to narrow down the expectations of the OTH

animals who work alongside them. There were some generalizable common jobs among the canine participants in these studies, for instance, providing a calm and affable therapeutic presence when engaging with service users. Other responsibilities, such as providing support to children during one-on-one counselling, were more specialized. In contrast to other findings, ability to perform professionalism was named consistently as an important skill for the dogs in this study.This result belies the colonial capitalist structure within which even OTH animals engage in labour.

Benefits for Dogs in the Workplace

Although they are currently recognized as property under the North American colonial legal system, in this study I recognize that the human/animal binary is artificially constructed, and my findings support the notion that OTH animals are complex biological creatures who have significant needs in the workplace, much like human workers. Unlike human workers, their work is often not acknowledged or recognized as work (Coulter, 2016), and their needs are not recognized or protected by a legal framework. When cross-referencing a manifold set of needs with a wide range of work environments, the means to meet these needs are often not available. Participants in this study acknowledged that the needs of their dogs come second to their responsibilities when they are on the clock, which is similar to human laborers working in a similar social context. PD mentioned that there have been times when the social work piece of her work has had to take precedence over the "working with the dog" piece, and I find this particularly interesting. What is the hierarchy here, why do responsibilities around human service users necessarily take precedence? I wondered if it was the practitioner herself or her

organization that determined when or for what reason this might occur, or whether it was a natural extension of the anthropocentric framework in which the practitioner's social work position is constructed. This would undoubtedly impact a canine co-worker, in this case perhaps a neglected co-worker, who is likely also a dependent and companion. In situations such as these, where OTH animals are engaged in human-mandated work, the first and most important consideration must be to what degree the work is exploitative. Coulter (2016) points out that this is affected by the occupation of the animal, the work required, the workers or coworkers, the species of the animal involved, and the individual worker's personality, preferences, feelings, and agency (Coulter, 2016). It is impossible to generalize across all the participants in this study whether being involved in social work practice is universally good or bad for dogs, however we can see that all of the OTH animal participants experience varying levels of challenges and benefits, and that these may vary over the course of their working lives, or even from day to day.

The question of consent must therefore be paramount in the conversation around engaging OTH animals in therapeutic work. This question is complicated by at least two factors: the legal status of animals as property in Canada, and the use of positive reinforcement training with dogs. In some cases, human participants in this study referred to "using" their dogs as therapeutic tools. Although it's not my preferred verbiage, this is an ethical grey area. These working dogs' only accorded legal protection is as property of their owner, or under the Animal Welfare Services Act. This act only covers protection of some animals, and only to the extent that they are supposed to be provided a basic, humane level of care, termed "general welfare" in the Act (Government of Ontario, 2020). Participants also spoke to the limits of that mentality, however, highlighting their responsibilities as caregivers to set hard boundaries with service users around what is okay and what is not okay when interacting with their dogs. It merits

identifying as well that what "protections" OTH animals do have in Canada are accorded by a nation-state government that is colonial and anthropocentric at its core.

As part of their utility, dogs are not necessarily accorded their own agency in determining where their boundaries lie, and in fact, positive reinforcement training can be used to infringe on these boundaries in some cases. PA was the only participant to identify that she allowed the dog who she worked alongside the freedom to choose with whom and for how long she spends her time. Not coincidentally, PA was a dog caregiver who volunteered her dog for involvement in a social worker's AAI, not a professional social service provider herself. Her dog had also not been formally trained through any specific organization. Conversely, several other human participants spoke about using treats to encourage or entice their dogs to engage with some service users when they appeared reluctant. This begs the question of what impact positive reinforcement training has on these working animals, and to what degree it is different than the compensation structures that we engage with as human workers (Coulter, 2016).

Donna Haraway notes one benefit of being a working dog as opposed to solely a domestic companion. She writes, "many of the serious dog people I have met doing my research emphasize the importance to dogs of jobs that leave them less vulnerable to human consumerist whims" (Haraway, 2003, p. 38). Although perhaps treated exploitatively to some degree as labourers, working dogs face different challenges than those companion animals who are not involved in structured labour, as they are regarded with consideration for their skills, instead of remaining vulnerable to the lifestyle and emotional changes and whims of pet owners. Having a multi-faceted life rather than being neglected sedentary and isolated in the home while humans in the family are obligated to be out of the house for the majority of the day is a benefit to the dogs involved in this study that more than one caregiver mentioned. Haraway's perspective was

further confirmed by participants in this study, one of whom explicitly identified that she perceived herself as being more dedicated to her dog's interests and wellbeing outside of work because it improved her dog's capacity to be supportive and engaged in their practice together.

When I interviewed PB, she identified a peripheral benefit to dogs being engaged in social work practice that has not been the focus of previous research. PB had moved to Ontario from another country, and upon arrival had been scared of dogs, which were not customary companion animals in her previous country of residence. In her social work role, she met and worked with PA's dog, and felt an interspecies connection with her that she had never experienced previously, leading her to want her own dog, despite prior fears. Exposure to dogs through AAI has the potential be a motivating factor for social work practitioners and others working alongside dogs, as well as service users, to become involved in other aspects of dog care, including spay/neuter programs, animal rescue or advocacy, foster, adoption, and responsible care of companion animals. While this is not of direct benefit to the working dogs themselves, it may be a benefit to OTH animal populations on a mezzo level.

While participants across the board indicated that their dogs were aware of their work and often demonstrated their understanding of their schedules during the week, responses in this study were inconclusive regarding whether or not there were benefits to the dogs' involvement in their work that justified the challenges that they might face.

Challenges Faced by Dogs in the Workplace

The participants in this study were less eager to talk about the challenges their dogs faced working in therapeutic environments than the benefits. It also appeared that they had rarely been

prompted to consider such a question prior to their involvement in the study, as many seemed surprised to consider the question. One of the biggest issues raised was from PD, who stated in her interview, "It's interesting – that might be the biggest difference, is their needs come second when they're working. It's hard to even tell when they're bothered by somebody." It is obvious that this challenge is intrinsically connected to the issue of use of positive reinforcement training with many working dogs. It is also fairly uniquely an issue that arises with dogs involved in therapy work versus even service work. Dogs working in therapeutic roles alongside handlers or caregivers are often trained for consistency, reliability, and professionalism. This approach centres the humans involved and their interests, as well as the anthropocentric values of the professional field. Other kinds of working animals are treated with more recognition of this subjectivity. Service dogs are an example of this. Service dogs' independent thinking and ability to advise humans of threats to their wellbeing is seen as an asset to their work. In this way, service dogs have more agency in their working roles in some cases than working dogs in other kinds of therapeutic roles.

A second challenge that PD identified was that she often realized that the dog who she worked with frequently appeared able to pick up on what emotions her clients were experiencing before she could. This may be a limitation of the language-based mode of engagement that so much of social work practice is reliant on. From a research perspective, it made me wonder what dogs pick up on that we never know or never notice. Although I attempted to document some of these factors in this study through the use of the sensor package, even this approach is limited by what I am able to imagine might be impacting a dog, and what I choose to include and measure using the tools that I have access to. Without the ability to perceive what is impacting a dog through the work that we choose for them, I wondered if we could ever really address their needs

in an effective way. Can we ever properly care for another animal if we have such limited perception and understanding of their experiences? If not, what does that mean when they're working alongside us, supporting us? It bears acknowledgement that some of these questions have been explored to a certain degree by cognitive ethology, as well as in other fields that will be addressed in a later section of this chapter regarding technologically mediated interspecies relationships. In this study, I have attempted to intentionally resist existing frameworks based on Eurocentric thought, rather centring decolonial, Indigenous knowledges. Unfortunately, the majority of the work referenced later in this section is done by primarily white, psychology-trained scholars.

PF raised a last challenge faced by her dog, which was that she noted over the course of the time that they had worked together that she frequently observed her dog experiencing what she suspected were nightmares when she was sleeping. She chose to navigate this by ensuring that her dog had adequate stimulation and exercise following heavy workdays to be able to "shake off the day". This is a novel finding that bears further research attention. In this case, PF was also the only participant to indicate that as a private therapist, she did consider the business aspect of involving her dog in her work. She noted that her dog offered a unique appeal to working with her that other therapists did not necessarily have. Finding ways to productively collaborate with her dog, who was adopted for this purpose, in the workplace was framed as not only an investment in their relationship, but also in thecapitalist success of her practice.

Despite all the challenges raised in this study, one of the participants raised the point that she wouldn't engage her dog to work with her if she didn't feel that it was positive for her. Over the course of this study, I found myself wondering if the other participants in the study would feel the same way if asked. My inclination is that they would. Yet, they did raise some salient

challenges faced by their dogs in the workplace, and one must examine what implications these have when considering the wellbeing of the animals involved.

Risks for OTH Animals

In previous research, scholars have addressed the various risks to humans posed by interspecies work environments (Policay and Falconier, 2019; Flynn et al., 2019). Allergies to OTH animals are often cited as requiring consideration before introducing dogs or other animals into work environments. Other considerations, including respiratory illness, phobias of OTH animals, and risk of injury caused by an OTH animal, are associated with liability.

On the other hand, participants in this study highlighted environmental risks experienced by the dogs that they worked with when prompted to discuss challenges faced by dogs working alongside social workers. This was particularly true in work environments that commonly integrated hazards such as unfamiliar OTH animals, or access to human food and other edibles that could make OTH animals sick if ingested. It was noted by PA in an interview that in the case of the presence of human food in an interspecies work environment, this risk is often framed as a potential hygiene issue, and therefore seen as more of a risk to humans than it is to OTH animals. Policies that focus on reducing risks faced by OTH animals are important within interspecies work environments, as mentioned by participants PC, PD, and PE in this study.

Some organizations that provide trained dogs to service providers for the purposes of therapeutic intervention retain official ownership of the OTH animal, the NSD included. If the dog's caregiver or the organization where they work have concerns that the animal is unable to continue with their work for a reason outside of their control the dog in question could be reclaimed and rehomed.

From an anthropocentric perspective, OTH animals continue to be legally categorized as property. There are no protections for workplace objects and items against facing this kind of abrupt and violent transition and loss because of a basic workplace accident or other circumstance. Even under our colonial capitalist state in Ontario, it would be widely considered unacceptable for a human worker to face these types of traumatic consequences and tolerate this total lack of agency.

Speciesism

I encountered glaring examples of speciesism in interspecies workplaces during this study. In Eurocentric social institutions, dogs are one of a few sympathetic species accorded preferential treatment by humans, including through their integration into the human workforce. Since I took on this project as a joint venture between my own field of social work and the adjacent critical animal studies, it stands to reason that I found the cognitive dissonance in these experiences unsettling. One of the main tenets of critical animal studies is the necessity of applying notions of critical justice, central to social work practice, across species divisions (Sorenson, 2014).

My encounters while working on this dissertation research have been unexpected and thought-provoking with this area of speciesism. An excerpt from my field notes from November 1, 2017 that describes one such encounter.

> I just noticed in the room I'm sitting in, there's a fish in a bowl. I thought it was just a water plant. I was charmed to see a small sign – "My name is [name]. My friends call me [nickname] [happy face]". […] Although my study is on dogs, the little life of a solitary confined betta fish in such a comfortable setting is so demonstrative of speciesism in this field. Perhaps social work has progressed enough that [D3] is considered worthy of co-worker status, but poor [fish] is just room decoration. What a stark and heartbreaking contrast. I wonder how much [fish] knows about the anthropocentric slavery he's engaged in here. I wonder if [D3] knows. I wonder how much the clients consider this.

The presence of this additional animal in the therapeutic environment struck me, particularly given the drastic observable differences in quality of life between them and D3. It also surprised me, given the enthusiasm with which D3's caregiver talked about her, that she had never mentioned housing another animal in the same space, and with potentially similar goals in mind with regards to her social work practice and service users. There are many ethical questions that arise when keeping animals isolated in restrictive environments, generally with access only to layperson care without the support of professionals such as veterinarians, behaviourists, or trainers. First and foremost, current veterinary wisdom is that betta fish should not be kept in tanks of less than 5 gallons in size, and prefer environments shared with other animal species, such as snails, shrimp, or frogs, as well as other species of fish (Mueller, 2019). It begs the question, what is so different between the keeping and care of a dog, like D3, and this fish?

Both animals spend their lives in anthropocentric environments where OTH animals are subject to hierarchical categorization based on species difference. These categories allow humans

to value some animals only in terms of their utility as a food source, whereas others are viewed as family members, and a large part of these systems of oppression and power are based on species designation and social perception. These systems are linked to colonial processes and other technologies of marginalization under disaster capitalism used to oppress human subjects. Scholar Cary Wolfe points out that as long as speciesist logics allow for the death and exploitation of nonhuman animals to be taken for granted, these logics will be available for use under other forms of discrimination of vulnerable others as well (Shukin, 2009). As such, the subtly speciesist act of keeping a living being in isolation in a small enclosure should therefore be the kind of normative but ultimately harmful act that social workers are actively working to resist. There is no way for humans to really understand what kinds of emotions or trauma are inflicted upon animals kept in such conditions, nor what kinds of vicarious traumas other animals in the environment, such as D3, might experience.

A secondary consideration is how the presence and quality of life of the fish might impact human clients. In my theory chapter, I discussed how subjects are continuously co-constructed through their relationships with those around them (Butler, 2004). As a researcher, I hope that humans are continuously broadening their awareness around issues of power and oppression, and that in contemporary life, this would inevitably lead to engagement with compassionate education and a developed understanding of the detrimental social effects of speciesism. Although the presence of the fish in the therapeutic environment may not be immediately traumatic for humans in the space, and in fact may enhance their experience of intervention early on, depending on their life experiences, it could come to sour and leave them with unpleasant associations with their engagement with social work and our consistency as

professionals in translating the purported values of our profession into effective praxis. Perhaps ironically, a service user's experience with another OTH animal in the social work context, such as a dog, may lend itself to this unpleasant association, as service users grow to appreciate animals as partners in our work.

There is a well-known and somewhat chilling urban legend that laugh tracks used in comedic television and movies to this day were all recorded in the 1950s, and therefore whenever we hear what is known as "canned laughter", we are actually hearing the voices of people who are now dead. While profound, this myth has been largely debunked. The relevance of this urban legend to my work is that while it is thought-provoking to contemplate the impact of the presence of a fish and a dog in a therapeutic environment, it is important to remember that what is truly at stake in this conversation is the life of the fish. If we are to approach the fish as a subject through a posthumanist lens, we know that the fish is a subject, and subjectivity is not a fixed and permanent state. Rather, subjects are changeable and permeable, and therefore variously embodied, spatially and temporally. I collected the data copied above in 2017, which means that nearly three years have lapsed since my observations were made. Given that betta fish seem to have estimated lifespans of about three years in captivity, made less if kept in tanks of less than 5 gallons in size (BettaFish.Org, 2017), it is unlikely that the fish in question is still alive. This reinforces the notion of animal studies at least in part as a study of ghosts and hauntings, always already too late to improve the short lives truly in question in our work.

In his 2011 publication, *I'll Be Dead by the Time You Read This*, Alaeff (2011) pairs artwork of animals with existential messages, such as "I enjoy being the victim," "there must be a reason I'm here," and "I have nowhere to run to". The image on the cover, along with the

philosophical title is that of a goldfish. This iconic image is reminiscent of a goldfish who I, as an animal-loving child, enjoyed a technologically mediated relationship with, one which is inextricably linked in my mind with the fish I encountered during this study, in the spectral nature of their presence in my present-day life.

The MOPy fish was a freeware cyberpet released in 1997, with which the human user cared for a digital fish modeled after the blood parrot cichlid and gained points based on printer use. It won the 2001 Guinness World Record for most downloaded cyberpet (Guinness Book of Records, 2000). The MOPy pet was an early precursor to popular web-based cyberpet programs such as Neopets, portable versions such as Tamagotchi, more complex games such as Nintendogs, and even luxury consumer robotic pets such as Sony's Aibo. I have vivid, pleasant memories of caring for and interacting with the MOPy fish on my family computer as a young child.

The fish in the MOPy program is based on millions of photos and behaviour studies of real parrot fish (Greganti, n.d.). Never did it cross my mind as a child that the MOPy fish I fed, played with, and diligently attended to the needs of, was essentially a digitally reanimated spectre of what were by then likely many dead animals. As an adult with heightened consciousness of the violent impact of capitalism on animals across species, I have to wonder if the sum of the positive recollections and the empathy that I undoubtedly learned and felt from my technologically mediated relationship with my MOPy fish, who was a composite figure representing many ghostly fish of the past, is worth the cost.

It is undeniable that early socialization experiences such as mine with the MOPy fish influenced my early interest in researching, working, and living with OTH animals. They also

reinforced ideals of anthropocentrism, animal captivity, and labour. It also bears noting that ultimately, the MOPy fish, with all its popularity, was at its core a marketing tool for Hewlett-Packard printers. The use of the printer gained users points that could be accumulated and exchanged for accessories that would enhance the fish's quality of life and the user experience of the simulation, such as a rock and plant. It is perhaps overly simplistic to suggest that my dissertation research was therefore indirectly inspired by a marketing scheme from The Global Beach Group that resulted in the likely deaths of many animals. In the development of my own technologies for mediating my relationships with the dogs in this study, however, I found it impossible to overlook the complexities of technologically mediated relationships with OTH animals and how they impact the real-life experiences of presently living animals.

Professionalism and Training

The requirements of professionalism for dogs include things like controlled behaviour that demonstrates formal training, a level of grooming that is observable to a service user, and a predictable and consistent engagement in their job responsibilities. The word "control" specifically came up in several interviews (unfortunately, the data analysis software that I used does not allow for text analysis to identify how many times this specific word was used), which I found shocking. This isn't a word that I would ever want to associate with my relationship with my companion animals, some of whom have worked alongside me in the past. Much like humans in relationship, the OTH animals who I work with and I come to an understanding about our expectations of each other, but I don't ever expect that these animals are under my control,

unless I'm referring to, for example, use of a leash to keep them safe from things like traffic. As Haraway (2003) writes, "I believe that all ethical relating, within or between species, is knit from the silk-strong thread of ongoing alertness to otherness-in-relation. We are not one, and being depends on getting on together" (p. 50).

It is very demonstrative of an anthropocentric approach to interspecies relationships to have the idea that humans must control OTH animals who work. In such a case, if humans are controlling them, they just work for us, not with us. Thom (2019) asks, "Can we imagine a way of setting and defending our boundaries in a way that is not punitive or vengeful? Are we able to maintain our bodily and psychological integrity while also remaining open to connection? What would a community based on indispensability look like?" (n.p.). Although the human participants in this study went so far as to describe that the dogs who they worked with felt as though they were a "part of them", it is evident in the results of the research that they are still participating in a system that is speciesist and oppressive. In Castricano and Corman (2016), Hobbs writes, "[…] discipline in all its abrupt and subtle forms becomes second nature" (p. 175), making reference to the canine industrial complex, and how dogs both embody and reflect social moral values through the fluid embodiment of "good" and "bad" dogs. In this case, it is plain to see that the dogs who work alongside social workers, based on their ability to perform professionalism according to anthropocentric standards, are seen to exemplify the best aspects of our field of practice. In other cases, where dogs would be unable to comply, they are simply not permitted to exist.

Predictability is such an essential, yet anthropocentric, measure of value for the dog's personality. As practitioners, we want the animals who we work with to offer the benefits of

being OTH animals to the service users we work with, but we seem to want them to behave as predictably and consistently as possible: non-animal animals. These are noteworthy requirements for these canine labourers and mirrors the requirements for the ideal neoliberal subject.

Because of my own social location as a neurodivergent person who also has psychiatric disabilities, the unattainable normativity of professionalism has impacted my experiences in social work, as well as through my doctoral studies and while undertaking this research project. I have spent the majority of my life masking the aspects of my identity that were non-normative in this regard, in large part unconsciously and to the point of physical and mental exhaustion. As much as possible, I curate the performative aspects of my moods, my behaviours, my habits, my personality, for public consumption under neoliberalism and particularly in professional environments. Obviously, that's not always healthy or sustainable. It wasn't until my adult life, however, that I was even aware that much of my energy was dedicated to this enterprise, having had no prior access to diagnosis or to de-stigmatized conversation about mental or chronic illness.

Having since been afforded greater access to these, I measure my masking efforts, and I do it less, because I simply can't afford the energy to maintain it all the time. To draw a parallel between my own disabled experiences and those of the dogs who participated in this study, I, as a neoliberal subject, no longer adhere to my professionalism training with the same predictable consistency as I once did. To map this analysis onto this research project, I was forced to consider what effects it could have on OTH animals when performing anthropocentric obligatory professionalism is the framework within their existence is permitted, from before the day that they are born, in the cases of animals who are bred to work in social work and adjacent fields. It

is difficult for me to contend with the scope and reality of that question, yet I acknowledge that within a capitalist, settler-colonial state, it is a reality with which many humans contend as well. There is a cyclical aspect to this conversation in that the normative neoliberal professionalism that we are upholding through the involvement of OTH animals in our work in this has obvious intersections with colonial discourses and the capitalist imperial project. These are mutually reinforcing structures of oppression that are bound to affect the people who we work alongside and who we serve. The findings of this study suggest that we seem to have the same normative behaviour expectations of dogs that we have of professionalized social workers and our clients when in therapeutic spaces.

The trajectory of legitimization of working animals is such that as involving animals in therapeutic intervention becomes seen as beneficial to service users and its success is measured according to the anthropocentric criteria of practitioners, so too does it become formalized, accredited, and increasingly costly to become involved in. Interestingly, most of the human practitioners involved in this study had not been formally trained in any kind of work with or care of OTH animals. While those interviewed for this study often said they would be interested in specialized training as well, it is clearly not accorded the importance equivalent to that of training for the dogs. This imbalance is clearly anthropocentric in nature. In social work education, we often speak about how theory and practice are reciprocal areas of study, each informing the other. Haraway (2003) notes that the process of dog training should be similarly reciprocal, a process in which all participants are changed.

There are huge opportunities here with regards to integrating decolonial perspectives and scholars into social work education as well, and this type of education could easily branch into

topics such as stewardship and the environment (Taylor, 2017; Fawcett and Johnson, 2019; McKibbin, 2019b).

Interspecies Relationships

This study's findings with regards to interspecies relationships was consistent with previous studies in this area. Human participants in this study described the intense bonds that they formed with the dogs who they worked with, often calling them their partners, friends, or buddies, and described the ways in which they noticed the dogs' presence and work having a positive impact on other people in their work environment. PH even went so far as to state that in her social work position, the idea of her being the "dog lady" had become an important part of her identity since involving her companion animal in her practice through AAI.

This study further validated the finding of previous research that the presence of OTH animals can have a social lubrication effect, facilitating interpersonal interaction and relationship building between humans (Wells, 2019). In her interview, PD stated simply, "People are happier to see me."

One service user interviewed for this study spoke in her interview about how it helps her to trust the dog's owner, her social worker, because she is also a dog owner. She articulated that when developing initial rapport with the practitioner, she saw it as a benefit that there was a dog working with the social worker, because it signalled to her that they had a mutual love of animals in common. In addition to the support they offer during the work that they do facilitating therapeutic rapport between social workers and service users, the positive influence of their

presence in the lives of their owners in terms of making office friends and building relationships with other humans involved in their professional lives should not be overlooked.

Conversely, one of the service users interviewed in this study raised an interesting counterpoint to the social lubrication modality. This participant, a teenager, spoke during her interview about how she was intimidated meeting the dog that supported the work of her social worker because she was sure that the dog would hate her. This was not the end result of their relationship; however, I had never before encountered in research a discussion of the reality that in some cases, having OTH animals involved in practice may be perceived as adding social pressure to an already emotionally heightened situation.

One of the questions that arose from my overall fairly positive findings around interspecies relationships was the question of corporeal affection. One of the benefits for humans of having OTH animals involved in social work practice in therapeutic environments is that because they are not necessarily bound by anthropocentric norms in the same way that human labourers are, they can offer types of comfort that humans in therapeutic relationships cannot. In institutional settings in particular, the dogs who participated in this study reportedly provide "tangible comfort" that cannot be provided otherwise. An example of this is offered from participant PD in my findings chapter. This begs the question, why do we find it appropriate to ask that kind of embodied practice from OTH animals when we don't find it appropriate to expect that from each other as human labourers? At what point are service users, or people in institutional environments in general, just lacking in tactile comfort? I have not encountered research that has explored these questions or inquired about the extent to which service users

enjoy the sensory, corporeal experience of the OTH animal, apart from the animal's personality itself.

In thinking through the implications of the findings of this study, both from the critical ethnographic and research-creation portions, I drew heavily on the theoretical lens for this study: decolonial thought and posthumanism.

The importance of the implications of this study weighs heavy, as critical animal studies scholars as well as decolonial theorists agree that it is not enough to wax about theory, we must move from the realm of ideas into critical praxis (Corman, 2012; Penney, 2014; Sorenson, 2014; Mathews, 2015; Pico, 2017; McKibbin, 2019b).

In his recent work, *Love Notes*, Philip McKibbin (2019b) has compiled several essays and articles, as well as new material, on his Politics of Love, developed in collaboration with Max Harris. McKibbin is a Māori (Ngāi Tahu) scholar based in Aotearoa New Zealand, and in the development of this decolonial political perspective, he draws on the work of bell hooks, Dr. Martin Luther King, Jr., and even references contemporary American politician Alexandria Ocasio-Cortez. A core tenet of McKibbin's Politics of Love is that it is radically inclusive, predicated on an ethic of interdependence. McKibbin writes,

> "The Politics of Love requires us to recognize our interdependence; and as love is universal, it asks us to extend our concern – beyond ourselves and those closest to us, to all people, as well as non-human animals. It is important, too, that we think about power. There is no shortcut to this. We must learn about power relations and how these operate to marginalise and exclude people" (p. 46).

A Politics of Love is already being used as a campaign platform by parties in Aotearoa New Zealand, i.e., the Green Party. This proves that it can and should be done elsewhere. As Roden (2015) has articulated, any other approach is in fact inadequate to address contemporary political and global complexities, such as climate change, global depletion, or to draw on a poignant example, pandemic. I have drawn heavily on McKibbin's suggestions for decolonial and posthumanist political praxis in developing the recommendations below.

Technologically Mediated Interspecies Relationships

In this study, the data collected with the sensor package were cross referenced with my field notes, as well as relevant literature on the subject of expressive body language used by dogs (Andreyev, 2017). I engaged in this process in order to evaluate whether or not this type of emergent, affordable technology could offer an alternative access point to assist researchers in developing partial understandings of OTH experiences of working in therapeutic environments. Use of digital technology as an extension and optimization of the researcher is congruent with cyborg theories.

The technology employed in this study was not extraordinarily advanced from either a software or hardware perspective, and it was extremely cost effective. It was non-invasive technology, and from a privacy perspective, it was ideal as it did not involve extra people, cameras, or audio recording, allowing it to be used in sensitive settings without ethical conflict. This is in contrast to some of the more traditional methods used in cognitive ethology of photo

analysis, which may not be permissible for use by social work researchers for ethical reasons. The findings were limited in some ways by the creative and experimental nature of the project. Still, the sensors were able to provide tangible results. Through analysis of the visualizations of the data, the body position and movement of the canine participant is able to be observed, variations in environmental factors were accurately measured, vocalizations could be monitored with precision as to their timing, and differences in dogs' work environments and behaviours could be observed.

There is great potential in the future development of this accessible technology alongside other methods – photography, video analysis, fMRI, motion capture – to develop an understanding of OTH animals' experiences of work in therapeutic environments. It is important that as we experiment with these technologies, we understand that their use impacts the data that we will be able to collect. Much as the ethnographer's bias should not be overlooked in observational data, the technology's influence on the research participants and study outcomes warrants recognition as well. In cases where digital technologies are employed, the relations between researcher and participant and our respective constitutional experiences of one another become technologically mediated in unique ways. My interactions with D3, the only canine participant in this study who observably had reservations about engaging with the sensor technology, serve to illustrate this.

In my first visit to D3, although she was initially hesitant to wear the sensor harness, she did settle in after a short time. I was able to collect data, and D3 did not appear to me or her caregiver to experience ongoing distress. However, when I arrived for my second data collection excursion with her, her caregiver noted that she had a stronger reaction to my arrival than she

expected she would. Although it was not possible to know, I noted that for D3, my relationship with her is mediated through my relationship to the technology. I was associated with the harness, as part of her first experience meeting me, which was not entirely positive. While I had originally taken field notes to do my best to account for her reaction to the sensor harness when thinking through the data collected by the sensors, during my second visit I also noted that given her reaction to me, even my observations about her personality and behaviour are impacted by D3's perception of the technology I employed in this study.

I also thought about what might have been the reason why D3 alone would have reacted negatively to the sensor package (for details, see the sensor findings section of my findings chapter). It did not escape my notice that she ended up being the only dog in the study for whom a technology-based training tool, in her case, a citronella spray bark collar, was being used. I wondered if perhaps this would result in a more negative association with wearable technology overall, and this should be taken into account when looking at her sensor data. D3 routinely interacted with other technology that is behaviour-modifying.

Discussion Conclusion

In this mixed-methods study, I have implemented the use of digital scholarship as part of a research-creation methodology in combination with a traditional critical ethnographic approach, and operating from a decolonial, posthumanist theoretical perspective. In this chapter, I used my theoretical lens to examine the findings of this study, organized by the most pertinent topics, which were: data sources, dogs' personalities and skills, benefits and challenges for dogs in the workplace, speciesism, professionalism and training, and interspecies relationships.

According to my methodologies and analytical lens, I attempted to operationalize an anti-anthropocentric approach and centre the perspectives of OTH animals in my data collection and analysis. There was vast variation in the personalities and skills of dogs in this study described by human participants and supported by the sensor data. Regardless of the context in which the dogs worked and their individual temperaments, human participants identified some direct benefits for the animals who worked alongside them, and these were supported by scholarly theories. Still, these benefits are tempered by the challenges and risks that OTH animals face in interspecies workplaces that are often organized according to Eurowestern, speciesist, and capitalist logics. I therefore conclude that to counteract the pervasive and oppressive forces at play, we must move forward with a love ethic, deferring to the original keepers of the land and of knowledges that have been marginalized in settler-colonial society.

Limitations

The limitations of this research are important to note, such as language and interspecies communication. The third limitation, focusing on the technological limits relating to sensors research involving OTH animals will be discussed in detail in a subsequent section.

First, one of the participants in this study was a service user whose first language is not English. As a bilingual researcher, gave me pause about the data collection process and how Anglo-centric it is. This feels particularly significant given that in the development of the methodology of this study, much consideration was given to the communication abilities of the OTH animal participants and my own interpretation skills, but I did not give the same depth of consideration to the abilities of the human participants. Obviously, if I'm using a system of keyword coding, this interview may be an outlier in some ways, because the participant has a different vocabulary set than a participant who is more comfortable in the language in which the interview was conducted. This is a methodological limitation overall and raises a secondary concern about linguistic ableism within the study, since the younger students I interviewed would have similar limitations. If the students have a different vocabulary because of their age range or grasp of the language in which the study is conducted, then my data will be limited in that I may not accurately represent them in the same way that I would if I were interviewing a group of people who was more demographically homogenous.

Second, a limitation of my interview guide which became clear to me as I was coding was that I did not probe participants about interspecies communication in this study. Future research should consider how working dogs and humans, especially the dogs' coworkers and handlers in the workplace, interact and communicate when they are working together, and how

effective is it? Is it a reciprocal system, or does it prioritize one party over the other? The only real examples I have of communication flowing from handler to dog is in work cues, also again in routine and parts of training. Particularly in a study that has a focus on OTH animal subjectivity, this seems a significant oversight upon reflection, given that so much of the scholarly conversation revolves around animals' capacities to communicate, both within their species groups, and with humans.

Using Sensors as Part of Research with OTH Animals

As part of the research-creation process with this innovative emerging technology, it was expected and realized that some limitations would emerge. These limitations included the documentation of physical factors that influenced the temperature data, differences in accuracy of analog versus I2C sensors, and the interpretation of the data graphs were a challenge due to outliers in data. Two additional limitations should also be noted, the choice of sensors, and interference of the sensor pack in the dogs' behavior, which both occurred prior to data analysis.

Cleaning and interpreting the temperature data was by far the most eventful part of the data analysis process. The sensor used in this project was a Grove Temperature and Humidity Sensor (DHT11), and it was positioned in a pocket of the harness that physically rested on the side of the wearer's torso. An unintended result of this placement was that when the dog involved in the data collection lay down on their side, the temperature would spike dramatically. In addition, in nearly all cases, the measured temperature increased over the course of the data

collection period. This can be easily explained, as the temperature of the dog's body can be expected to rise during their work, since their work is embodied and requires effort.

In the future, I would suggest to researchers engaging with this technology that they consider the use of two separate temperature sensors. First, a sensor should be positioned on the inside of the harness, with the express purpose of monitoring the body temperature of the wearer. Monitoring the body temperature of working animals, as well as OTH animals who exercise or compete in sport, is essential to determining their health and physiological status, as well as ensuring their overall wellbeing (Rizzo et al., 2017). Therefore, having separate sensors to document changes in the body temperature of the dog and the environmental temperature would be beneficial, since these do not necessarily correlate (Carter and Hall, 2018, p. 34). Second, a sensor should be positioned elsewhere in the room and programmed to communicate wirelessly with the sensor pack controller to measure ambient temperature.

The second limitation was the unanticipated differences between how two different types of sensors recorded data impacted the usability of the final output. Due to technological considerations, both analog and I2C sensors were employed in this sensor pack. The accelerometer and loudness sensors were both analog, and the other sensors (digital accelerometer, barometer, and light) were all I2C sensors. The temperature and humidity sensor used a third type of digital protocol that is irrelevant to this limitation. In basic terms, the differences between these sensors are how they communicate with the controller that runs the complete package, and therefore how the data is recorded. In the case of this project, some of the data that had to be excluded from analysis because it was obviously flawed (i.e., outside of possible ranges) may have been the result of errors in the code that I wrote to run the sensor

package rather than in the actual functionality of the technology. As a social scientist with no computer sciences background, these coding errors were due to my own inexperience, and the exclusion of some of the data was anticipated as part of the experimental and exploratory nature of the research-creation process.

The third limitation is the ease of interpretation of the visualizations as a method of analysis. In the visualizations generated of this data, there is great variation in the Y-scale, largely due to outliers in the data. This project is a qualitative study; therefore, no advanced statistical analyses were conducted on the numerical data. As such, it was necessary to remain aware of these variations in scale during interpretation, and there may be some findings that were overlooked due to the lack of quantitative analysis.

An additional, data collected for this study was the choice of sensors. A few ethical boundaries were with the cost and availability of technologies, as well the priority of this study of being as non-invasive as possible. Initially, it had been my hope to be able to collect more extensive biometric data, and my failure in doing this is a limitation of this data set.

Two types of data that I would have liked to have collected to create a richer and deeper partial exploration of the experience of the working dogs involved in this study were heart rate and breathing rate data. However, I did make an effort in initially with this study to collect heart rate data using a Grove Ear-Clip Heart Rate Sensor, an inexpensive, non-invasive, and RoHS (Restriction of Hazardous Substances) compliant device and receiver used by humans. Unfortunately, it was determined through testing that due to the presence of fur on the dogs' skin, this sensor was not functional for this study.

An alternative that I also tested was using conductive rubber cord, colloquially referred to as a "stretch sensor" as a component of a dog harness to collect breathing rate data from the canine participants. Adafruit, the vendor for this product, describes its functionality as follows, In a 'relaxed' state, the resistance is about 350 ohms per inch. As you pull on it, the resistance increases (the particles get further apart). As you stretch it out, the resistance increases. Once the force is released, the rubber will shrink back, although its [sic] not very 'fast' and it takes a minute or two to revert to its original length. It is not a true linear sensor, and the resistance may vary from batch to batch, so we consider it a way to measure stretching motion but isn't really precise. Unfortunately, the speed of the rubber shrinking back to its original (relaxed) state was not sensitive enough to changes to record meaningful data in this use case, so this data was also not collected.

During my first two data collection sessions with D2, I also made note that the equipment that I used during the visit was completely covered in dog hair by the end of the sessions. Although this finding was not derived from the visualization of the data collected, I did find it significant as a consideration for this project as well as for future research. Particularly because the data analysis for this project was conducted during the COVID-19 quarantine period, I was made acutely aware through these notes that any kind of equipment used in scholarly data collection with other-than-human animals should be treated the same way it would if it were being used by humans. An important fact learned is that the equipment should be cleaned and disinfected between use, in order to reduce the risk of transmission of any kind of illness or ailment between OTH animal participants or zoological transmission to humans in the case of unforeseen circumstances.

Finally, it is worth noting that despite the non-invasive nature of the sensor package used in this study, the use of any technology to record data with working animals will always have the potential for some level of interference with the dogs' behavior during their work. This limitation was obvious with one of the canine participants (D3) in particular, who was hesitant about wearing the harness that contained the sensor package. The human participants who I spoke with associated with this canine participant noted that her behavior was somewhat different when using the sensor package, that she seemed somewhat more restless and a little more nervous than usual. The second instance when this limitation came up was with a different participant, whose caregiver and handler noted that her movement was a little different and stiffer when wearing the harness with the sensor package than it usually was.

Conclusion

Full Circle

In May of 2019, I returned to my Ph.D. program full time following a leave of absence to complete this research project. That same month, the rescue racing greyhound with whom I had shared my life since my undergraduate studies was diagnosed with a nerve sheath tumour, and we began palliative care. As I moved through data analysis and into dissertation writing, D's health declined, and her life quietly came to an end at the end of that year. It was excruciating, and simultaneously somewhat fitting, to be closing this chapter of my scholarly pursuits as I spent my last days with the dog who had inspired me to begin it.

I spent the last months that I was able to spend with her not only providing palliative care and spoiling her in every way I could think of, but also wracking my brain, replaying every moment we spent together. Had I done everything I could to give her a positive life? D died peacefully in my arms (as so many other animals in my life have and have not) surrounded by people who loved and cared for her. There were so many questions that I wish I could have asked her.

This dissertation project was able to document and explore partial experiences of dogs involved in social service field. I used mixed methods approach using critical ethnographic methodology to gather data through interviews with social workers and service users, as well as extensive observational field notes. A research-creation methodology was also used to collect descriptive data (Singleton and Straits, 2010), using sensor-based digital scholarship techniques.

This research addressed four main research questions. (1), How can the experiences of dogs in social work be documented? (2), Why is it important to document these experiences? (3), How are dogs experiencing their involvement in social work practice? (4), What knowledge do the social workers who work with dogs have about involving these animals in social work? Noting this, it is important to recognize that the research was never going to be possible to fully respond to my third research question, as humans do not have the capacity to explore with dogs their experiences in ways that would provide data to a level of adequate saturation. However, based on the findings of this study, we can know that dogs involved in AAI with social workers have very high levels of responsibility and the demands made of them are significant. Whether or not the needs of dogs are met, whether or not they are able to consent to these experiences, and whether the benefits that they experience are adequate compensation for their labour, are all questions that merit further exploration if we aim to achieve a justice-oriented interspecies social work practice (Coulter, 2016).

This study proves that innovative use of emergent digital technology, specifically sensors, alongside traditional critical research methods and theoretical perspectives that centre anti-anthropocentric decolonial and posthuman perspectives have potential to provide creative and novel pathways toward new insight into these experiences. Through a generative and innovative research-creation process, the sensor package used in this study was able to successfully collect data about the canine study participants' movements, vocalizations, and reactions (or lack thereof) to environmental factors such as temperature, humidity, and light level. Similar data could be useful in future studies to enhance ethnographic findings and challenge our perceptions as researchers. In the future, the experiences of working dogs may be

partially documented using similar technology, even by social sciences researchers with limited pre-existing technical knowledge and resources.

Finally, social workers are in need of more specialized training in the field of AAI, and a more complete understanding of the experiences of the dogs with whom they work in the field. Prior research has been limited in its anthropocentric exploration of humans' experiences of AAI, and we have reached a critical moment when it is necessary to pivot to centre the marginalized perspectives of OTH animals inresearch that is fundamentally about them and their work.

Implications for Social Work

Policy: Macro Level

Ever-expanding our notions of inclusivity in social work is a necessary theme for the implications of this study overall, and for a Politics of Love. McKibbin (2019b) notes that implications of this expansion would necessarily include opening of borders, showing hospitality to immigrants, and a focus on rehabilitation and reintegration of people who commit offences as opposed to incarceration or capital punishment.

Embracing a Politics of Love that is inclusive of other forms of life and adequately acknowledges interdependence necessarily requires macro-level policy changes predicated on love. For me personally, this would involve liberation of animals to a certain extent, beginning with the abolishment of the industrial slaughter and agriculture complex, but inclusive of coerced working animals, particularly in capitalist industries. However, I also recognize that most macro-level change is incremental. There are macro-level policies that can better support OTH animal

welfare than the lack of policies we are currently operating within, particularly in the near future, in which it is possible to envision meaningful, non-coercive, humane work participation for OTH animals (Coulter, 2016, p. 148). Coulter (2016) defines humane jobs as jobs that are good for both humans and animals (p. 163), and writes, "Humane jobs […] are absolutely integral to more just and sustainable societies and economies, and should play a more central role in labor and animal advocacy projects, job creation and community development plans. […] Such work is a powerful and necessary extension of interspecies solidarity and demonstrates genuine respect for both people and animals" (p. 163). I believe, and this study supports, the idea that social work and the roles that the profession offers for OTH animal engagement may hold potential for humane jobs that are ethically congruent with a Politics of Love.

Max Harris maintains that the basic policy requirement for a Politics of Love is a universal basic income: "It expresses confidence in people's ability to determine their own life courses, rather than demeaning or belittling them" (McKibbin, 2019b, p. 146). This is the first step toward people having the capacity to in politics that is less individualistic, and rather is based on collectivism. Coulter (2016) writes, "Political parties have positions on animals that are both predictable and unexpected, and the conventional left-right spectrum is not a clear predictor of animal politics," (p. 135). While the Canadian political system is inherently colonial in nature, this is the system that we must currently contend with when we speak about macro-level policies. What this would look like in practice is individual engagement in political action. McKibbin writes, "As individuals, we can work to achieve higher animal welfare standards by supporting the campaigns of animal welfare organizations, by lobbying for better legislation to protect

animals, and by choosing to vote for political parties that endorse high standards of animal welfare (to offer only a few examples)" (McKibbin, 2019b, p. 25).

Policy: Mezzo Level

The Canadian Association of Social Workers (CASW) Code of Ethics remains unchanged from its latest revision now 15 years ago, in 2005 (CASW, 2005). This Code governs our entire profession as social workers across this country, and the first value is, "Respect for the Inherent Dignity and Worth of Persons" (CASW, 2005, p. 4). The simple but essential implication of this study is that the inclusivity of this anthropocentric statement needs to be revised to include respect for the inherent dignity and worth of all living things. McKibbin (2019b) writes, "[…] the Politics of Love requires us to re-think who and what politics concerns. Just as it suggests that we should take climate change seriously, in part as an expression of love to future generations, it requires that we show love to non-human animals, as sentient beings with interests" (p. 30). Coulter (2016) affirms that the notion of interspecies solidarity is rooted in Indigenous knowledges, and in some countries, these notions have been integrated into local, regional, and national political projects that emphasize collectivism and reciprocity, citing Bolivia as an example (p. 153). For social workers working toward social justice in Canada, centring a decolonized and non-anthropocentric political stance through the revision of our outdated Code of Ethics would be beneficial.

Policy: Micro Level

On a micro level, the policy implications to come out of this study appear relatively simple on the surface and apply largely to practitioners who already work in interspecies environments, or who aspire to make the environments where they work more inclusive to OTH animals. Coulter (2016) points out that many organizations exist to improve the lives of working animals after their retirements, or to improve the lives of working animals in global South, however there is little focus on animals who are currently engaged in labour in the global north. Interspecies workspaces should take into account the needs of all of the workers engaged in their use, humans and non-humans included, regardless of their role in the space.

Organizations considering integrating AAI into their practice through partnerships with OTH animals entering their work environments need to critically interrogate the qualification and professionalization of the animals they hope to involve versus the goals that they hope to achieve. The agency, consent, and safety of OTH animals involved in this work should be a paramount consideration, of equal importance to agency, consent, and safety of humans involved in the work. Plenty of attention should be given to advance planning for all of these essential aspects. Organizations should also consider what benefits they can offer to OTH animal labourers in lieu of financial compensation if this is not an option, much as they would for new human labourers entering their workforce (Coulter, 2016).

Coulter (2016) also points out that were animals to be viewed as social subjects rather than human property, labour unions could be a powerful vehicle for working OTH animals, like human labourers.

Practice

A Politics of Love asserts core values of care, concern, equity, and addressing systems of oppression. McKibbin (2019b) therefore suggests that we might aim to create an interspecies "loving system", that would "'wrap around' people, nurturing them throughout their lives" (p. 29). Congruent with social justice aims and decolonial approaches, implementing this type of comprehensive system would require creativity and collaboration. Gibbons and Gray (2004) assert that critical social work is perfectly positioned as a position to support this type of creative endeavour, with Indigenous peoples and decolonial praxis at the forefront of this of development (McKibbin, 2019a; Maracle, 2015; Dayle John, 2019; Doxtater, 2004).

Theory

As theory and practice should mutually reinforce processes in social work, I would suggest that it is time to recognize the limitations of the anti-oppressive approach, and critically examine our definitions of oppression to be less Eurocentric and more inclusive. Considering the results of this study, this would mean considering OTH animals not as property, but as labouring subjects in our professional field, andtherefore worthy of equitable treatment. McKibbin (2019) writes,

> Even though the argument for including animals in our politics is made in relation to human concerns (e.g., anti-racism), the struggle is different. In thinking about inclusion, it is helpful to think about voices. In combating racism, sexism, and most other forms of

> human oppression, we need to make space for voices that are not being heard. This is a very different project to speaking for others. In combating speciesism, however, animals need to be given a voice. This does require us to 'speak for' others. (It is worth noting that many animals do have voices – for example, a cat's purring. We need to listen to these. But we also need to do a lot of the cognitive and linguistic work for them. Animals need interpreters.) These two projects can learn from each other, but they are different. (p. 80).

Future definitions of oppression should include consideration of speciesism as an actively damaging power dynamic in our field and society. As I hope I have demonstrated through this research that it is not enough to accord agency to only the OTH animals who we deem worthy to our professional lives, when all animals have different interests. Congruently, McKibbin (2019b) notes that,

> We must also avoid falling into the trap of thinking that similarity to human beings can serve as a proxy for determining a species' moral worth. This is especially tempting if the focus is on consciousness or sentience, because we find it a lot easier to imagine other mammals and birds as conscious and sentient as we are than we do, say, a fish or insects. (p. 80).

It is also completely essential that we make a conscious focal shift to centre decolonial thought in our theoretical perspectives, and to make space for Indigenous knowledge and voices to lead this shift (McKibbin, 2019a; Maracle, 2015; Dayle John, 2019; Doxtater, 2004). In order to

accomplish these goals, we must also prioritize the reconciliatory relationships by returning land and traditional territories to its rightful stewards, as well recognizing their inherent rights to self-determination in order to achieve a state of coexistence that affords Indigenous peoples the capacity to participate in immediate conversations (Maracle, 2015; Estes, 2019).

Education

Using research-creation methodology and employing emergent digital technology in my dissertation project was met with more disciplinary resistance than I imagined initially. I advocated strongly for inclusion of this part of my work in the project because it feels to me like it enriches an otherwise traditional approach Eurocentric approach to research. By critically challenging and including this methodology into my project, I offered a unique contribution to both social work and critical animal field of studies. This aspect of my project was designed and documented through the process of experimentation and learning about the digital scholarship through my fellowship with the Sherman Centre for Digital Scholarship (SCDS). During this process, I took extensive field notes and documented the whole process through a series of Wiki pages, blog entries, and a public presentation that I gave at SCDS (Appendix J), and all of these materials through this creative process were included as part of my data for this project.

One issue that arose from this process was the question of digital literacy in social work, a topic that is highly underexplored. As we approach the end of the first quarter of the 21st century, the line between producer and consumer of digital technology continues to blur, as was demonstrated by this portion of my study. Over the years that I spent developing and operationalizing this project, I was consistently surprised how difficult it was to explain the

project to social work practitioners and scholars, even though the sensor package itself is not much more complex than a consumer wearable product like a Fitbit, for example.

The Ontario Association for Media Literacy defines media literacy as "understanding mass media and the techniques they used, as well as their impact, from a social constructionist perspective, as well as developing the ability to create media products" (Koltay, 2011, p. 213). We can extrapolate this definition to apply to digital literacy, and Koltay (2011) suggests five essential competencies in this area: internet searching, hypertext navigation, knowledge assembly, content evaluation, and emerging technology literacy. Koltay (2011) explains the necessity of the ability to adapt to new technological innovations, and not remain a captive of outdated tools and resources, which is an easily observable phenomenon when we look at the technologies being used in social work practice and research. I believe that further research is required in order to encourage momentum, so that social work scholarship and innovation are not left behind as relevant technology continues to advance.

Innovation

Posthumanist scholars assert that the human and our relationships are becoming technologically mediated to an unprecedented degree (Braidotti, 2013; Mellamphy and Biswas Mellamphy, 2014). More now than ever before, we inhabit a future present with technology (Irigaray, 2008). Social work as an institution and field of inquiry is being left behind, and innovation is more often disciplined than rewarded in this professional field. Although my dissertation research was seen as ambitious and, in some ways, extraordinary, it was a highly successful experience through which I was able to explore interdisciplinary (list the

interdisciplinary fields) concepts and engage with non-traditional (list these fields) fields of study that have great applicability to social work, not least of which is digital scholarship. In order to progress toward social change in an unstable time, social work needs to at least have a base level of digital literacy and interdisciplinary engagement. If we do not, we leave ourselves, our practice, and our service users vulnerable to the predatory elements of a technologically mediated society that are becoming ever more prevalent over time (Mellamphy and Biswas Mellamphy, 2014), for example, malicious use of facial recognition technology by the instruments of the criminal industrial complex (Martin, 2019). All the while, we will miss out on the unknown transgressive potential of these same technologies (Braidotti, 2013).

Research

My initial proposal for this research involved a component that unfortunately was unable to be included in this project. It was the repetition of a self-administered questionnaire. Self-administered questionnaires, although highly standardized, are the most widely used data collection method in the social sciences (Singleton and Straits, 2010). The most common design for a questionnaire is the cross-sectional design, which is used to collect data from a cross-section of respondents in a short period of time to attempt to represent a particular target population (Singleton and Straits, 2010): in this case, social workers in Ontario. The questionnaire which I had planned to use and would be recommended in future research of this kind has been administered three times in past research: once by Risley-Curtiss (2010) with social workers across the United States, once by Hanrahan (2013) in Nova Scotia, and by Chalmers, Rohr, and Dell (2016) in the prairie provinces of Canada.

This questionnaire uses a contextual design (Singleton and Straits, 2010) to evaluate social workers' inclusion of animals in their practice, their reasons for doing this or not, and their level of relevant knowledge and training. In the future, research should be undertaken to disseminate this questionnaire through the Ontario Association of Social Workers, and the Ontario College of Social Workers and Social Service Workers. This project could confirm that OTH animals are involved in and experiencing aspects of social service provision in this region and has the potential to serve as foundational knowledge.

For any researcher interested in engaging specifically with the type of sensor package that I used in this study, I would suggest the use of two separate temperature sensors. First, a sensor should be positioned on the inside of the harness, with the express purpose of monitoring the body temperature of the wearer. Second, a sensor should be positioned elsewhere in the room and programmed to communicate wirelessly with the sensor pack controller to measure ambient temperature.

Knowledge Translation and Exchange

This study demonstrates a clear need within the field of social work to provide basic training around environmental stewardship and basic care of OTH animals to future social work practitioners and students as part of their BSW education. Not only is this congruent with a decolonial approach to social work and relevant in the era of climate change, but it has practical implications such as the ability to work more effectively to support service users who have OTH animal companions in their lives. This educational initiative could be extended into MSW-level training around anthropocentrism in the field, AAI, and interspecies social work. McKibbin

(2019b) also notes that "In education, the Politics of Love might see us promoting loving values," (p. 29). This can be achieved in a myriad of ways, and his primary suggestion for those in settler-colonial societies is through the instruction of Indigenous knowledge and values.

In their work *The Animals' Agenda,* Bekoff and Pierce (2017) write that there exists a knowledge translation gap that needs to be closed between people who study OTH animals and their wellbeing, and people who care and work with animals. They write,

> "A huge body of scientific literature is available to guide our interpretive work with animals, but this knowledge is simply not being put to use in the service of animals. Philosopher Robert Jones at California State University, Chico, carefully reviewed the past four decades of research into the physiological and cognitive capacities of a wide range of species, and then compared the state of scientific knowledge to animal welfare protections for farm and lab animals. He concluded: 'The moral status of animals as reflected in almost all—even the most progressive—welfare policy is far behind, is ignorant of, or arbitrarily disregards our current and best science on sentience and cognition.'"

It is therefore essential that studies such as this include knowledge translation materials that provide relevant insight to practitioners in the field.

The sensor data graphs that were produced through this study would translate well into a poster or other visual materials, either static or digitally animated. The methods, findings and results could be presented at conferences or distributed digitally through relevant channels as a resource for human and animal practitioners.

With regards to the innovation aspect of my project, I have already created two knowledge translation and exchange products that are in circulation. The first is a workshop on apps in social work practice, which I have presented twice so far, both through McMaster School of Social Work. One was in a private workshop for faculty and graduate students entitled "Computer Applications and Software for Academic Organization", and the other was at the Social Work Field Forum in 2017, this presentation is an online resource entitled "Creating Arduino Project Using Sample Code," and is based on my research-creation process for this research project. It also was distributed through the Sherman Centre for Digital Scholarship mailing list.

There are two scholarly products that I hope will emerge from this study to bolster theoretical development in the field. First, I would be interested in penning a proposal for ways of considering OTH subjectivity within social work. Secondly, it would be of great benefit to our profession to move forward the theoretical development as well to collaborate with Indigenous scholars to create a theoretical proposal that frames decolonial theories and posthuman theory as a complementary perspective for critical analysis of anthropocentrism.

In addition to expanding this educational aspect, I created a course syllabus to accompany this project during my comprehensive exams, which is entitled "Who Are We and Who Do We Serve? Subjectivity in Critical Social Work." This course would be aimed at the graduate level to teach students how to deconstruct dominant discourses around identity in social work practice and challenge modernist notions of subjectivity within the discipline by exploring contemporary theoretical perspectives such as postmodernism, queer theory, posthumanism, and decolonialism.

Summary

As a result of this study, I found that the dogs working alongside social workers in this field display a range of behaviours and skills, such as maintaining a calm demeanor while working in either a general or specialized professional setting. While more specialized skills for dogs are required, such as participating in student assemblies where the school environment could potentially be in a chaotic state at times. Interestingly practitioners often described their dog's individual personality as essential to the work that they participate with, many dogs are capable of positive involvement in therapeutic work. The dogs' ability to perform professionalism in a way that was recognized by humans involved in their work, particularly their predictability and ability to conform to their handlers' expectations consistently, was key to the dog's success.

There is no one way to describe the responsibilities expected of dogs involved in social work practice, nor environments in which they are engaged in this work. The range of job descriptions and workspaces is simply too broad. Some of these jobs and work environments have been conceptualized with positive interspecies engagement in mind, while others are completely focused on anthropocentric purposes and OTH animals involved in them are expected to simply adapt. Social workers across the board noted that the most challenging aspect of integrating a working dog into an interspecies space was not as much about managing the dog as it was about managing the cost, logistics, and other people's behaviours and expectations. While risks associated with being involved with a dog are typically at the forefront of an organizations' considerations when preparing to engage with AAI, the risks to the dog of being involved with that work are rarely considered.

Like human workers, dogs have many easily identified physical and emotional needs that must be met in order for them to perform their jobs in the ways that their human coworkers and service users expect. Despite the numerous needs identified, human participants noted that these needs are prioritized below the needs of humans while the dogs are engaged in work. In addition, unlike human workers, dogs are legally considered property in Canada, which means that even in therapeutic environments, they have no rights extended to them to ensure that their needs are met. Questions around consent and agency of dogs in the therapeutic workplace emerged from the findings of this study. These merit further investigation, particularly in relation to the impact of positive reinforcement training used with working dogs, and the ability of OTH animals to express non-consent in work environments.

Human participants identified some benefits that dogs experienced because of their work, including getting to spend the day with their caretakers rather than in isolation, resulting in positive attention and exercise; the formation of relationships with multiple humans; prioritization of their health by caretakers; and finally, having a more active and structured life. A structural level benefit of involving OTH animals in social work practice is that exposure to dogs through AAI has the potential be a motivating factor for practitioners and service users to become involved in other aspects of dog care, including spay/neuter programs, animal rescue or advocacy, foster, adoption, and responsible pet ownership. Large-scale breeding and the numbers of animals who wind up without proper care or in shelters is a welfare issue that arises from the popularity of captive animals (Bekoff and Pierce, 2017). It should be noted that for any social work practitioner who works with especially a purebred dog, of which there are many, it should go in part and parcel with their work that they ought to be paying attention to these welfare issues that they are exacerbating.

The dogs involved in this study were described as partners, friends, or buddies, and the human participants consistently described the deep, meaningful interspecies bonds they had with the dogs. The social worker participants reiterated that dogs acted as a social facilitator between them and the service users who they work with. By contrast, it was identified by one service user that having OTH animals involved in a social worker's practice can add additional social pressure to an already emotionally heightened situation.

Unfortunately, this study also found that dogs and other OTH animals are marginalized and exposed to speciesism in their work in social service provision. The effects of speciesism on human service users, social workers, or the OTH animals themselves have not been adequately investigated in research or theoretical work on social work and animals. While dogs involved in this study had been trained and evaluated to various degrees, in some cases since the day of their birth. Humans in the study also expressed an interest for more extensive training.

This study also found that sensor-based emergent digital technology has the potential to play a role in non-invasive and cost-effective research with OTH animals in the future. This aspect of my project was creative and experimental in nature yet yielded tangible results. Along with my presence in the session with the social worker, the dog and the service user, I was able to observe the body position and movement of canine participants while working, variations in environmental factors were accurately measured, and OTH animal vocalizations could be monitored with precise timing. There is great potential in the future development of this accessible technology alongside other methods – photography, video analysis, fMRI, motion capture – to develop a more complete, if still partial, understanding of OTH animals' experiences of work in therapeutic environments.

The implications of this study for various areas of social work practice are described

above, including policy, practice, theory, education, innovation, research, and knowledge translation and exchange. Recommendations from this study include policy suggestions like adoption of a Politics of Love for future policy development, centring Indigenous voices and knowledges; revising the CASW Code of Ethics; and developing anti-anthropocentric best practices and educational opportunities for new social workers. From a scholarly perspective, it is recommended that the limitations of anti-oppressive perspective be explored and addressed through the inclusion of decolonial perspectives in our theoretical and educational approaches. Future research that addresses the limitations of this study is also recommended, particularly research that encourages digital literacy in social work and encourages research opportunities in digital technology that can allow social work as a field to deeply consider and more effectively advocate for the wellbeing of OTH animals involved in social work practice.

Works Cited

Adafruit. (n. d.). Conductive Rubber Cord Stretch Sensors. Retrieved from adafruit.com/product/519

Adams, C. (2010). *The Sexual Politics of Meat: A Feminist-Vegetarian Critical Theory*. Danbury: Continuum International.

Agamben, G. (2004). Anthropological Machine. In Agamben, G. *The Open*. Palo Alto: Stanford University Press.

Ahmed, S. (2006). Introduction: Find Your Way. In Ahmed, S. *Queer Phenomenology: Orientations, Objects, Others.* Durham: Duke University Press.

Alaeff, R. (2011). *I'll Be Dead by the Time You Read This.* New York: Penguin Random House.

Armstrong, P. (2002). The Postcolonial Animal. *Society and Animals 10*(4), 413-419.

Balluerka, N., Muela, A., Amiano, N., & Caldentey, M. A. (2015). Promoting psychosocial adaptation of youths in residential care through animal-assisted psychotherapy. *Child Abuse & Neglect, 50*(Complete), 193-205. doi:10.1016/j.chiabu.2015.09.004

Barker, S. B., Barker, R. T., McCain, N. L., & Schubert, C. M. (2016). A randomized cross-over exploratory study of the effect of visiting therapy dogs on college student stress before final exams. *Anthrozoös, 29*(1), 35-46. doi:10.1080/08927936.2015.1069988

Barker, S. B., Barker, R. T., McCain, N. L., & Schubert, C. M. (2017). The effect of a canine-assisted activity on college student perceptions of family supports and current stressors. *Anthrozoös, 30*(4), 595-606. doi:10.1080/08927936.2017.1370227

Barker, S. B., Rogers, C. S., Turner, J. W., Karpf, A. S., & Suthers-Mccabe, H. M. (2003). Benefits of interacting with companion animals: A bibliography of articles published in refereed journals during the past five years. *The American Behavioral Scientist, 47*(1), 94-97.

Beauchamp, T. L., & Wobber, V. (2014). Autonomy in chimpanzees. *Theoretical Medicine and Bioethics, 35*(2), 117–132. http://doi.org/10.1007/s11017-014-9287-3

Becker, J. L., Rogers, E. C., & Burrows, B. (2017). Animal-assisted social skills training for children with autism spectrum disorders. *Anthrozoös, 30*(2), 307-326. doi:10.1080/08927936.2017.1311055

Behrens, J. (1997). Principles and Procedures of Exploratory Data Analysis. In *Psychological Methods, 2*(2), 131-160.

Bekoff, M. (2006). Animal Passions and Beastly Virtues: Cognitive Ethology as the Unifying Science for Understanding the Subjective, Emotional, Empathic, and Moral Lives of Animals. *Human Ecology Forum, 13*(1), 39 – 59.

Bekoff, M. (2007). *The Emotional Lives of Animals: A Leading Scientist Explores Animal Joy, Sorry, and Empathy – and Why They Matter*. Novato: New World Library.

Bekoff, M. (2008). Increasing our Compassion Footprint: The Animals' Manifesto. *Zygon, 43*(4), 771-781.

Bekoff, M., and Pierce, J. (2017). *The Animals' Agenda: Freedom, Compassion, and Coexistence in the Human Age*. Boston: Beacon Press.

Belcourt, B. R. (2015). Animal Bodies, Colonial Subjects: (Re)Locating Animality in Decolonial Thought. *Societies, 5*, 1-11.

bell hooks. (2001). *All About Love: New Visions*. New York: HarperCollins.

Berger, J. (1991). Why Look at Animals? In Berger, J. *About Looking*. New York: Pantheon Books.

Berland, J. (2009). Animal and/as Medium: Symbolic Work in Communicative Regimes. *Global South (3)*1, 42-65.

Berlant, L. (2011). *Cruel Optimism*. Durham: Duke University Press.

BettaFish.Org. (2017). How Long Do Betta Fish Live? Average Lifespans. Retrieved from https://bettafish.org/faq/how-long-do-betta-fish-live/

Bhabha, H. K. (2004). Interrogating Identity: Frantz Fanon and the Postcolonial. In Bhabha, H. K. *The Location of Culture*. Abingdon: Routledge.

Bhabha, H. K. (2004). The Other Question: Stereotype, Discrimination, and the Discourse of Colonialism. In Bhabha, H. K. *The Location of Culture*. Abingdon: Routledge.

Bhabha, H. K. (2004). The Postcolonial and the Postmodern: The Question of Agency. In Bhabha, H. K. *The Location of Culture*. Abingdon: Routledge.

Binfet, J. (2017). The effects of group-administered canine therapy on university students' wellbeing: A randomized controlled trial. *Anthrozoös, 30*(3), 397-414. doi:10.1080/08927936.2017.1335097

Binfet, J., & Passmore, H. (2016). Hounds and homesickness: The effects of an animal-assisted therapeutic intervention for first-year university students. *Anthrozoös, 29*(3), 441-454. doi:10.1080/08927936.2016.1181364

Birke, L., and Hockenhull, J. (2015). Journeys Together: Horses and Humans in Partnership. *Society and Animals, 23*, 1-20.

Birke, L., and Parisi, L. (1999). Animal, Becoming. In Steeves, P. (ed). *Animal Others: On Ethics, Ontology, and Animal Life*. New York: State University of New York Press.

Black, K. (2012). The relationship between companion animals and loneliness among rural adolescents. *Journal of Pediatric Nursing, 27*, 103-112.

Bourdieu, P. (1978). Sport and Social Class. *Social Science Information, 17*, 819-840.

Bradshaw, G. A. (2010). You see me, but do you hear me? the science and sensibility of trans-species dialogue. *Feminism & Psychology, 20*(3), 407-419.

Braidotti, R. (2013). *The Posthuman*. Cambridge: Polity Press.

Braun, B. (2007). Biopolitics and the Molecularization of Life. *Cultural Geographies, 14,* 6-28.

Brautigan, R. (1967). All Watched Over By Machines of Loving Grace. In Brautigan. *All Watched Over By Machines of Loving Grace*. United States: Communication Company.

Breitenbach, E., Stumpf, E., Fersen, L. V., & Ebert, H. (2009). Dolphin-assisted therapy: Changes in interaction and communication between children with severe disabilities and their caregivers. *Anthrozoos, 22*(3), 277-277.

Brodie, S., & Biley, N. (1998). An exploration of the potential benefits of pet facilitated therapy. *Journal of Clinical Nursing, 8,* 329-337.

Brown, C. S. (1995). Anthropocentrism and ecocentrism: The quest for a new worldview. *The Midwest Quarterly, 36*(2), 191-202.

Brown, J. (2015). Being Cellular: Race, the Inhuman, and the Plasticity of Life. *GLQ: A Journal of Lesbian and Gay Studies, 21*(2-3), 321-341.

Burgon, H. (2011). 'Queen of the World': Experiences of 'at risk' young people participating in equine-assisted learning/therapy. *Journal of Social Work Practice, 25*(2), 165-183.

Busch, C., Tucha, L., Talarovicova, A., Fuermaier, A. B. M. 1. a. b. m. fuermaier@rug. n., Lewis-Evans, B., & Tucha, O. (2016). Animal-Assisted Interventions for Children with Attention Deficit/Hyperactivity Disorder: A Theoretical Review and Consideration of Future Research Directions. *Psychological Reports, 118*(1), 292–331. https://doi-org.libaccess.lib.mcmaster.ca/10.1177/0033294115626633

Cameron, J. (2015). On Experimentation. In Gibson, K., Rose, D. B., Fincher, R. *Manifesto for Living in the Anthropocene.* Brooklyn: punctum books.

Canadian Association of Social Workers (CASW). (2005). Code of Ethics. Retrieved from http://www.casw-acts.ca/sites/default/files/attachements/CASW_Code%20of%20Ethics_0.pdf

Canadian Unitarian Council (CUC). (2015). The Principles and Sources of Our Religious Faith. Retrieved from http://cuc.ca/principles-and-sources/

Carlsson, C., Nilsson Ranta, D., & Traeen, B. (2015). Mentalizing and emotional labor facilitate equine-assisted social work with self-harming adolescents. *Child and Adolescent Social Work Journal, 32*(4), 329-339. doi:10.1007/s10560-015-0376-6

Carlsson, Catharina. (2017). Triads in Equine-Assisted Social Work Enhance Therapeutic Relationships with Self-Harming Adolescents. *Clinical Social Work Journal, 45*(4), 320-331. DOI:10.1007/s10615-016-0613-2

Carter, A. J., & Hall, E. J. (2018). Investigating factors affecting the body temperature of dogs competing in cross country (canicross) races in the UK. *Journal of thermal biology*, *72*, 33-38.

Casey, J., Csiernik, R., Knezevic, D., & Ebear, J. (2018). The Impact of Animal-Assisted Intervention on Staff in a Seniors Residential Care Facility. *International Journal of Mental Health & Addiction, 16*(5), 1238–1248. https://doi-org.libaccess.lib.mcmaster.ca/10.1007/s11469-017-9849-5

Cassady, J. (2008). "Strange things happen to non-christian people": Human-animal transformation among the inupiat of arctic alaska. *American Indian Culture and Research Journal, 32*(1), 83-101.

Castricano, J., and Corman, L. (2016). *Animal Subjects 2.0*. Waterloo: Wilfred Laurier University Press.

Centre for Addiction and Mental Health (CAMH). (2012). The healing effects of a White "Seal". Retrieved from http://www.camh.ca/en/hospital/about_camh/newsroom/CAMH_in_the_headlines/stories/Pages/The-healing-effects-of-a-White-'Seal'.aspx

Centre for Addiction and Mental Health (CAMH). (2014). Paro the Seal at CAMH. Retrieved from https://youtu.be/Hvuvu49nlNw

Chalmers, D., Rohr, B., Dell, C. (2016). Social Work Practice and Human-Animal Interaction Survey: A Canadian Prairie Provinces Study. One Health Symposium, University of Saskatchewan. Saskatoon, SK.

Chapman, O., and Sawchuk, K. (2012). Research-Creation: Intervention, Analysis, and "Family Resemblance". *Canadian Journal of Communication, 37,* 5-26.

Charles, N., & Wolkowitz, C. (2019). Bringing dogs onto campus: Inclusions and exclusions of animal bodies in organizations. *Gender, Work & Organization, 26*(3), 303–321. http://doi.org/10.1111/gwao.12254

Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. Thousand Oaks: Sage.

Chisholm, D. (2010). Biophilia, Creative Involution, and the Ecological Future of Queer Desire. In Mortimer-Sandilands, C., and Erickson, B. *Queer Ecologies: Sex, Nature, Politics, Desire*. Bloomington: Indiana University Press.

Clarke, J. (2004) Dissolving the public realm? The logics and limits of neo-liberalism. *Journal of Social Politics, 33*(1), 27-48.

Coates, J. (2003). *Ecology and Social Work: Toward a New Paradigm*. Black Point: Fernwood Publishing.

Colebrook, C. (2015). What Is It Like to Be a Human? *Transgender Studies Quarterly, 2*(2), 227–243. https://doi.org/10.1215/23289252-2867472

Coleman, G. J., Hall, M. J., & Hay, M. (2008). An evaluation of a pet ownership education program for school children. *Anthrozoos, 21*(3), 271-271.

Connell, C. G., Tepper, D. L., Landry, O., & Bennett, P. C. (2019). Dogs in schools: The impact of specific Human–Dog interactions on reading ability in children aged 6 to 8 years. *Anthrozoös, 32*(3), 347-360. doi:10.1080/08927936.2019.1598654

Cooke, B. J., & Farrington, D. P. (2015). The effects of dog-training programs: Experiences of incarcerated females. *Women & Criminal Justice, 25*(3), 201-214. doi:10.1080/08974454.2014.909763

Corbin, J. M., & Strauss, A. L. (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3e [ed.].). Thousand Oaks: Sage.

Corman, L. (2012). *The ventriloquist's burden? animals, voice, and politics* (Order No. AAINR92818). Available from ProQuest Sociology Collection. (1520343395; 201421083). Retrieved from http://search.proquest.com/docview/1520343395?accountid=12347

Coulter, K. (2016). Caring for the animals who work for us - The Globe and Mail. (2019, May 7).

Crossman, M. K. (2017). Effects of interactions with animals on human psychological distress. *Journal of Clinical Psychology, 73*(7), 761-784. doi:10.1002/jclp.22410

Crossman, M. K., Kazdin, A. E., & Knudson, K. (2015). Brief unstructured interaction with a dog reduces distress. *Anthrozoös, 28*(4), 649-659. doi:10.1080/08927936.2015.1070008

Cuénod, M., Gasser, J. (2003). Research on the mentally incompetent. *J Med Ethics, 29*, 19-21.

Curl, A. L., Bibbo, J., & Johnson, R. A. (2017). Dog walking, the Human–Animal bond and older adults' physical health. *The Gerontologist, 57*(5), 930-939. doi:10.1093/geront/gnw051

Daltry, R. M., & Mehr, K. E. (2015). Therapy dogs on campus: Recommendations for counseling center outreach. *Journal of College Student Psychotherapy, 29*(1), 72-78. doi:10.1080/87568225.2015.976100

Davies, B. (2005). The (im)possibility of intellectual work in neoliberal regimes. *Discourse: Studies in the Cultural Politics of Education, 26*(1), 1-14.

Deckha, M. (2012). Toward a Postcolonial, Posthumanist Feminist Theory: Centralizing Race and Culture in Feminist Work on Nonhuman Animals. *Hypatia, 27*(3), 527-545.

Dell, C. A., Chalmers, D., Bresette, N., Swain, S., Rankin, D., & Hopkins, C. (2011). A healing space: The experiences of first nations and inuit youth with equine-assisted learning (EAL). *Child & Youth Care Forum, 40*(4), 319-336. doi:10.1007/s10566-011-9140-z

Derrida, J. (2008). The Animal That I Therefore Am (More to Follow). In Derrida. *The Animal that I Therefore Am*. New York: Fordham University Press.

Donaldson, S., and Kymlicka, W. (2011). *Zoopolis: A Political Theory of Animal Rights*. Oxford: Oxford University Press.

Donohue, K. (2005). Pet Loss: Implications for Social Work Practice. *National Association of Social Workers Magazine*. Washington: NASW, Inc.

Duke University. (2021). Duke Canine Cognition Centre: Publications. Retrieved from https://evolutionaryanthropology.duke.edu/research/dogs/publications.

Dunlop, K., & Tsantefski, M. (2018). A space of safety: Children's experience of equine-assisted group therapy. *Child & Family Social Work, 23*(1), 16-24. doi:10.1111/cfs.12378

Esposito, R. (2008). *Bíos: Biopolitics and Philosophy*. Minneapolis: University of Minnesota Press.

Esposito, R. (2011). Biopolitics. In Esposito, R. *Immunitas: The Protection and Negation of Life*. Cambridge: Polity Press.

Esposito, R. (2011). *Immunitas: The Protection and Negation of Life*. Cambridge: Polity Press.

Esteves, S. W., & Stokes, T. (2008). Social effects of a dog's presence on children with disabilities. *Anthrozoos, 2*, 5−15.

Faver, C. A. (2009). Seeking our place in the web of life: Animals and human spirituality. *Journal of Religion & Spirituality in Social Work: Social Thought, 28*(4), 362-378. doi:10.1080/15426430903263161

Fawcett, L., and Johnson, M. (2019). Coexisting Entities in Multispecies Worlds: Arts-Based Methodologies for Decolonial Pedagogies. In Lloro-Bedart, T. and Banschbach V. S. (Eds.) *Animals in Environmental Education: Interdisciplinary Approaches to Curriculum and Pedagogy*, p. 175-193. Springer International Publishing: New York.

Fenton, A. (2011). On the need to redress an inadequacy in animal welfare science: toward an internally coherent framework. *Biology & Philosophy*, *27*(1), 73–93. http://doi.org/10.1007/s10539-011-9291-1

Ferré. (1994). Personalistic Organisicim: Paradox or Paradigm, in Attfield and Belsey (eds.). *Philosophy and the Natural Environment.* Cambridge: Cambridge University Press.

Fincher, R., and Iveson, K. (2015). Conviviality as an Ethic of Care in the City. In Gibson, K., Rose, D. B., Fincher, R. *Manifesto for Living in the Anthropocene.* Brooklyn: punctum books.

Fine, A. (2010). *Handbook on Animal-Assisted Therapy: Theoretical Foundations and Guidelines for Practice.* London: Academic Press.

Fine, A. (2011). Understanding the AAT Rx: Applications of AAI in Clinical Practice. In Chris Blazina, Güler Boyraz and David S. Shen-Miller (Ed.). *The psychology of the human-animal bond: A resource for clinicians and researchers* (pp. 125-136) New York: Springer.

Fitbark. (n.d.). Retrieved from https://www.fitbark.com/

Flanders, C., Legge, M. M., Plante, I., Goldberg, A., Ross, L. (2018). Gender Socialization Practices among Bisexual and Other Nonmonosexual Mothers: A Qualitative Examination. Journal of GLBT Family Studies, 15(2).

Flanders, C.E., Robinson, M., Legge, M.M., & Tarasoff, L.A. (2016). Negative Identity Experiences of Bisexual and Other Non-Monosexual People: A Qualitative Report. Journal of Gay and Lesbian Mental Health, 20(2), 152-172. doi: 10.1080/19359705.2015.1108257

Flanders, C., Tarasoff, L., Legge, M. M., Robinson, M., Gos, G. (2017). Positive Identity Experiences of Bisexual and Other Non-Monosexual People. Journal of Homosexuality, 8, 1014-1032. http://dx.doi.org/10.1080/00918369.2016.1236592

Flynn, E., Mueller, M.K., Luft, D., Geldhof, G.J., Klee, S., Tedeschi, P. and Morris, K.N. (2019). Human-animal-environment interactions and self-regulation in youth with psychosocial challenges: Initial assessment of the Green Chimneys model. Human-Animal Interaction Bulletin. Submitted.

Flynn, E., Roguski, J., Wolf, J., Trujillo, K., Tedeschi, P., & Morris, K. N. (2019). A randomized controlled trial of animal-assisted therapy as an adjunct to intensive family preservation services. *Child Maltreatment, 24*(2), 161-168. doi:10.1177/1077559518817678

Foster-Gilbert, C. (2013). Ethical issues in research on humans, or how new research questions are stretching our moral philosophies, but not to their limits. *NeuroReport, 24*(18), 1072–1075. http://doi.org/10.1097/WNR.0000000000000074

Foucault, M. (1982). The Subject and Power. *Critical Inquiry, 8*(4), 777-795.

Foucault, M. (1994). Ethics, subjectivity, and truth: The essential works of michel foucault 1954-1984. In P. Rabinow (Ed.) R. Hurley et al (Trans.), New York: The New York Press.

Francione, G. (1995). *Animals, Property, and the Law.* Philadelphia: Temple University Press.

Frederick, K., Ivey Hatz, J., & Lanning, B. (2015). Not just horsing around: The impact of equine-assisted learning on levels of hope and depression in at-risk adolescents. *Community Mental Health Journal, 51*(7), 809-817. doi:10.1007/s10597-015-9836-x

Friedmann, E., Galik, E., Thomas, S. A., Hall, S., Cheon, J., Han, N., . . . Gee, N. R. (2019). Relationship of behavioral interactions during an animal-assisted intervention in assisted living to health-related outcomes. *Anthrozoös, 32*(2), 221-238. doi:10.1080/08927936.2019.1569905

Gaard, G. (1993). Living Interconnections with Animals and Nature. In Gaard. (ed). *Ecofeminism: Women, Animals, Nature*. Philadelphia: Temple University Press.

Gee, N. R., Sherlock, T. R., Bennett, E. A., & Harris, S. L. (2009). Preschoolers' adherence to instructions as a function of presence of a dog and motor skills task. *Anthrozoös, 22*(3), 267-267.

Geist, T. (2011). A Conceptual Framework for Animal Assisted Therapy. *Journal of Child and Adolescent Social Work, 28*, 243-256.

George Mason University. (2021). Writing a Scientific Research Report. Retrieved from https://writingcenter.gmu.edu/guides/writing-an-imrad-report#:~:text=%E2%80%9CIMRaD%E2%80%9D%20format%20refers%20to%20a,or%20engineering%20and%20computer%20sciences.

Geroux, R. (2019). Introduction to the Special Issue: Decolonizing Animal Studies. *Humanimalia, 10*(2), p. 1-9.

Gibson-Graham, J. K., and Miller, E. (2015). Economy as Ecological Livelihood. In Gibson, K., Rose, D. B., Fincher, R. *Manifesto for Living in the Anthropocene.* Brooklyn: punctum books.

Gibson, K., Rose, D., Fincher, R. (2015). Preface. In Gibson, K., Rose, D. B., Fincher, R. *Manifesto for Living in the Anthropocene.* Brooklyn: punctum books.

Glover, G. (2011). Overview of Functional Magnetic Resonance Imaging. *Neurosurgery Clinics of North America, 22*(2), p. 133-139.

Goldmann, K. M., Hatfield, D. R., & Terepka, A. (2015). The potential influence of a companion-animal's presence on aspects of the therapeutic alliance. *Anthrozoös, 28*(4), 661-672. doi:10.1080/08927936.2015.1070009

Gonski, Y. A. (1985). The therapeutic utilization of canines in a child welfare setting. *Child & Adolescent Social Work Journal, 2*(2), 93-105. doi:10.1007/BF00757475

Gordon, A. (1996). Ghostly Matters. Minneapolis: University of Minnesota Press.

Government of Ontario. (2020). Animal Welfare. Retrieved from https://www.ontario.ca/page/animal-welfare

Greganti, B. (n. d.) Global Marketing. Retrieved from http://www.greganti.org/mopyfish/global.html

Guest, K., and Mattfeld, M. (2018). Humanimalia Roundtable on Breed with Margaret Derry, Donna Haraway, Donna Landry, Harriet Ritvo, and Sandra Swart Humanimalia, 10(1), n.p.

Guinness Book of Records. (2000). London: Guinness Book of Records.

Hacklab.TO. (n.d.) About. Retrieved from https://hacklab.to/about/

Hall, M. (2011). The Roots of Disregard: Inclusion and Exclusion in Classical Greek Philosophy. In Hall, M. *Plants as Persons*. Albany: SUNY Press.

Handlin, L., Nilsson, A., Lidfors, L., Petersson, M., & Uvnäs-Moberg, K. (2018). The effects of a therapy dog on the blood pressure and heart rate of older residents in a nursing home. *Anthrozoös, 31*(5), 567-576. doi:10.1080/08927936.2018.1505268

Hanrahan, C. (2011). Challenging Anthropocentrism in Social Work through Ethics and Spirituality: Lessons from Studies in Human-Animal Bonds. *Journal of Religion & Spirituality in Social Work 30*(3), 272-293.

Hanrahan, C. (2013). Social Work and Human Animal Bonds and Benefits in Health Research: A Provincial Study. *Critical Social Work, 14*(1). Retrieved from http://www1.uwindsor.ca/criticalsocialwork/SWhumananimalbonds

Haraway, D. (1988). Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspectives. *Feminist Studies, 14*(3), 575-599.

Haraway, D. (1989). Metaphors into Hardware: Harry Harlow and the Technology of Love. In Haraway, D. *Primate Visions: Gender, Race, and Nature in the World of Modern Science*. Abingdon: Routledge.

Haraway, D. (1989). The Bio-politics of a Multicultural Field. In Haraway, D. *Primate Visions: Gender, Race, and Nature in the World of Modern Science*. Abingdon: Routledge.

Haraway, D. (2003). *The Companion Species Manifesto.* Chicago: Prickly Paradigm Press.

Haraway, D. (2008). Companion Species, Mis-Recognition, and Queer Worlding. In Giffney, N. and Hird, M. (eds). *Queering the Non/Human* (xxiii-xxviii). Burlington: Ashgate.

Haraway, D. (2008). *When Species Meet*. Minneapolis: University of Minnesota Press.

Harris. (2011). Taking the "Human" Out of Human Rights. *Cambridge Quarterly of Healthcare Ethics, 20*, 9-20.

Harrod, H. L. (2000) *The Animals Came Dancing: Native American Sacred Ecology and Animal Kinship.* Tucson: University of Arizona Press.

Hatch, A. (2007). The view from all fours: a look at an animal-assisted activity program from the animals' perspective. *Anthrozoös, 20*(1), 37+. Retrieved from https://link-gale-com.libaccess.lib.mcmaster.ca/apps/doc/A174640602/AONE?u=ocul_mcmaster&sid=AONE&xid=8001b355

Hayward, T. (1997). Anthropocentrism: A Misunderstood Problem. *Environmental Values, 6*(1), 49–63.

Hemsworth, S., & Pizer, B. (2006). Pet ownership in immunocompromised children--a review of the literature and survey of existing guidelines. *European Journal of Oncology Nursing, 10*(2), 117-127. doi:10.1016/j.ejon.2005.08.001

Henry, C. L., & Crowley, S. L. (2015). The psychological and physiological effects of using a therapy dog in mindfulness training. *Anthrozoös, 28*(3), 385-402. doi:10.1080/08927936.2015.1052272

Hobbs. (2016). Canine Cartography: On the Curious and Queer Pleasures of Being a Dog. In Castricano and Corman (Eds.), *Animal Subjects 2.0* (p. 175-202). Wilfred Laurier University Press.

Hogan, L., Metzger, D., Peterson, B. (1999). *Intimate Nature: the Bond Between Women and Animals.* New York: Ballantine Books.

Horn, L., Range, F., & Huber, L. (2013). Dogs' attention towards humans depends on their relationship, not only on social familiarity. *Animal cognition, 16*(3), 435-443.

Hornborg, A. C. (2013). *Mi'kmaq Landscapes: from Animism to Sacred Ecology.* Hampshire: Ashgate.

Hornik, K. (2020). R FAQ. Retrieved from https://cran.r-project.org/doc/FAQ/R-FAQ.html#What-is-R_003f

Hoy-Gerlach, J., and Wehman, S. (2017). *Human-Animal Interactions: A Social Work Guide.* Washington: NASW, Inc.

Instone, L. (2015). Risking Attachment in the Anthropocene. In Gibson, K., Rose, D. B., Fincher, R. *Manifesto for Living in the Anthropocene.* Brooklyn: punctum books.

Irigaray, L. (2008). *Sharing the World*. New York: Continuum.

Iveson, K. (2015). Graffiti is Life. In Gibson, K., Rose, D. B., Fincher, R. *Manifesto for Living in the Anthropocene.* Brooklyn: punctum books.

Jalongo, M. R., & McDevitt, T. (2015). Therapy dogs in academic libraries: A way to foster student engagement and mitigate self-reported stress during finals. *Public Services Quarterly, 11*(4), 254-269. doi:10.1080/15228959.2015.1084904

Jalongo, M. R., Astorino, T., & Bomboy, N. (2004). Canine visitors: The influence of therapy dogs on young children's learning and well-being in classrooms and hospitals. *Early Childhood Education Journal, 32*(1), 9-16. doi:10.1023/B:ECEJ.0000039638.60714.5f

Jarolmen, J., & Patel, G. (2018). The effects of animal-assisted activities on college students before and after a final exam. *Journal of Creativity in Mental Health, 13*(3), 264-274. doi:10.1080/15401383.2018.1425941

Jarvis, D. (2004). *Haunted Shores.* Paradise: Flanker Press.

Jasperson, R. A. (2010). Animal-assisted therapy with female inmates with mental illness: A case example from a pilot program. *Journal of Offender Rehabilitation, 49*(6), 417-433. doi:10.1080/10509674.2010.499056

Jau, J., & Hodgson, D. (2018). How interaction with animals can benefit mental health: A phenomenological study. *Social Work in Mental Health, 16*(1), 20–33. https://doi.org/10.1080/15332985.2017.1302037

Johnson, J., & Barnard, N. D. (2014). Chimpanzees as vulnerable subjects in research. *Theoretical Medicine and Bioethics, 35*(2), 133–141. http://doi.org/10.1007/s11017-014-9286-4

Kahn Jr, P. H., Saunders, C. D., Severson, R. L., Myers Jr, O. E., & Gill, B. T. (2008). Moral and fearful affiliations with the animal world: Children's conceptions of bats. *Anthrozoös, 21*(4), 375-375.

Kanji, A. (2017). Colonial Animality: Canadian Colonialism and the Human-Animal Relationship. In Woons, M. and Weier, S. (Eds.) *Critical Epistemologies of Global Processes*, n.p. E-International Relations.

Kerepesi, A., Dóka, A., & Miklósi, Á. (2015). Dogs and their human companions: the effect of familiarity on dog–human interactions. *Behavioural processes, 110*, 27-36.

Kerswell, K. J., Bennett, P., Butler, K. L., & Hemsworth, P. H. (2009). Self-reported comprehension ratings of dog behavior by puppy owners. *Anthrozoös, 22*(2), 183+. Retrieved from https://link-gale-com.libaccess.lib.mcmaster.ca/apps/doc/A207324089/AONE?u=ocul_mcmaster&sid=AONE&xid=c7de3803

Kim, C. J. (2015). *Dangerous Crossings*. Cambridge: Cambridge University Press.

Kirby, V. (2008). (Con)founding 'the Human': Incestuous Beginnings. In Giffney, N., and Hird, M. *Queering the Non/Human*. Farnham: Ashgate.

Kloep, M. L., Hunter, R. H., Kertz, S. J., Kloep, M. L., Hunter, R. H., & Kertz, S. J. (2017). Examining the effects of a novel training program and use of psychiatric service dogs for military-related PTSD and associated symptoms. *American Journal of Orthopsychiatry, 87*(4), 425-433. doi:10.1037/ort0000254

Koltay, T. (2011). The media and the literacies: media literacy, information literacy, digital literacy. Media, Culture & Society, 33(2), 211–221. http://doi.org/10.1177/0163443710393382

Kramer, S. C., Friedmann, E., & Bernstein, P. L. (2009). Comparison of the effect of human interaction, animal-assisted therapy, and AIBO-assisted therapy on long-term care residents with dementia. *Anthrozoös, 22*, 43–57.

Krause-Parello, C. A., & Gulick, E. E. (2015). Forensic interviews for child sexual abuse allegations: An investigation into the effects of animal-assisted intervention on stress biomarkers. *Journal of Child Sexual Abuse, 24*(8), 873-886. doi:10.1080/10538712.2015.1088916

Kujala, Miiamaaria V. (2018) Canine emotions: Guidelines for research. *Animal Sentience, 14*(18).

Kurdek, L. A. (2009). Young adults' attachment to pet dogs: Findings from open-ended methods. *Anthrozoös, 22*(4), 359-359.

Kuzara, S. M., Pendry, P., Gee, N. (2019). Exploring the Handler-dog Connection Within a University-Based Animal-Assisted Activity, *Animals, 9*(7), 402.

Lannon, A., & Harrison, P. (2015). Take a Paws: Fostering student wellness with a therapy dog program at your university library. *Public Services Quarterly, 11*(1), 13-22. doi:10.1080/15228959.2014.984264

Lasher, M. (1998). A Relational Approach to Human-Animal Bond. *Anthrozoös, 11*(3), 130-133(4).

Legge, M. M. (2016). The Role of Animal-Assisted Interventions in Anti-Oppressive Social Work Practice. *British Journal of Social Work*. doi: 10.1093/bjsw/bcv133

Legge, M. M. (n.d.). Greyhound Sensor Rig, AKA Quantified Dog. Retrieved from https://macwiki.mcmaster.ca/posthumanism/index.php/Main/GreyhoundSensorRig

Legge, M. M., Flanders, C., Robinson, M. (2017). Bisexual People and Microaggression: Implications for Critical Social Work. Social Work in Mental Health. http://dx.doi.org/10.1080/15332985.2017.1357669 [Epub July 17 2017]

Legge, M. M., Flanders, C., Tarasoff, L., Taha, R., Robinson, M. (2018). A Critical Examination of Online News Media Representations of Bisexual Women Who Use Cannabis. Journal of Bisexuality, 18(2), 206-229(24). DOI: 10.1080/15299716.2018.1460648.

Legge, M. M., Robinson, M. (2017). Animals in Indigenous Spirituality: Implications for Critical Social Work. Journal of Indigenous Social Development, 6(1), n.p. Retrieved from http://umanitoba.ca/faculties/social_work/media/v6i1-02_legge_robinson.pdf

Legge, M. M., and Taha, R. (2017). "Fake Vegans": Indigenous Solidarity and Animal Liberation Activism. *Journal of Indigenous Social Development, 6*(1), p. 63-81.

Levinson. (1962). The dog as co-therapist. *Mental hygiene, 46*, 59-65.

Levinson. (1984). Human/Companion Animal Therapy. *Journal of Contemporary Psychotherapy, 14*(2), 131-144.

Livingston, J., and Puar, J. (2011). Interspecies. *Social Text, 29*(1), 106: 3-14.

Machová, K., Kejdanová, P., Bajtlerová, I., Procházková, R., Svobodová, I., & Mezian, K. (2018). Canine-assisted speech therapy for children with communication impairments: A randomized controlled trial. *Anthrozoös, 31*(5), 587-598. doi:10.1080/08927936.2018.1505339

Madison, D. S. (2012). *Critical Ethnography: Method, Ethics, and Performance.* Thousand Oaks: Sage.

Mallon, G. P. (1994). Cow as co-therapist: Utilization of farm animals as therapeutic aides with children in residential treatment. *Child & Adolescent Social Work Journal, 11*(6), 455-474. doi:10.1007/BF01876570

Maracle, L. (2015). Memory Serves. Edmonton: NeWest.

Marcus, D. A. (2013). The science behind animal-assisted therapy. *Current Pain and Headache Reports, 17*(4), 322-7. doi:10.1007/s11916-013-0322-2

Martin, E. (1994). Configurations of Healthy Bodies. In Martin, E. *Flexible Bodies: Tracking Immunity in American Culture from the Days of Polio to the Age of AIDS.* Boston: Beacon Press.

Martin, N. (2019). *The Major Concerns Around Facial Recognition Technology.* Retrieved from https://www.forbes.com/sites/nicolemartin1/2019/09/25/the-major-concerns-around-facial-recognition-technology/?sh=453137cc4fe3

Martinelli, D. (1997). Anthropocentrism as a Social Phenomenon: Semiotic and Ethical Implications. *Social Semiotics, 18*(1), 79-99.

Mason, J. (2002). *Qualitative researching* (2nd ed.). Thousand Oaks: Sage.

Mason, S. (2006). Brief report on the experience of using proxy consent for incapacitated adults. *Journal of Medical Ethics, 32*(1), 61–62. http://doi.org/10.1136/jme.2005.012302

Mathews, F. (2015). *Strategia*: Thinking with or Accommodating the World. In Gibson, K., Rose, D. B., Fincher, R. *Manifesto for Living in the Anthropocene.* Brooklyn: punctum books.

McKibbin, P. (2019a, July 3). Leading for justice: love, indigeneity, and non-human animals [presentation]. Decolonizing Animals 2019, Ōtautahi (Christchurch), Aotearoa (New Zealand). https://www.youtube.com/watch?v=vrYQaJOEkEY

McKibbin, P. (2019b). *Love Notes: For a Politics of Love.* Brooklyn: Lantern Press.

McMaster University. (2020). *How a dog named Boom is helping us learn more about the lives of service animals.* Retrieved from https://brighterworld.mcmaster.ca/articles/how-a-dog-named-boom-is-helping-us-learn-more-about-the-lives-of-service-animals/

Mellamphy, D., and Biswas Mellamphy, N. (2014). From the Digital to the Tentacular, or From iPods to Cephalopods: Apps, Traps, and Entrées-without-Exit. In Matviyenko, S., and Miller, P. *The Imaginary App.* Boston: MIT Press.

Miller, P., and Matviyenko, S. (2014). *Imaginary App.* Boston: MIT Press.

Miller, P., and Rose, N. (2008). Production, Identity, and Democracy. In Miller, P., and Rose, N. *Governing the Present.* Cambridge: Polity Press.

Minke, L. K. (2017). Normalization, social bonding, and emotional support— A Dog's effect within a prison workshop for women. *Anthrozoös, 30*(3), 387-395. doi:10.1080/08927936.2017.1311065

Monsen, R. B. (2001). Children and pets. *Journal of Pediatric Nursing, 16*(3), 197-198. doi:10.1053/jpdn.2001.25268

Morgan, P. (2015). Demystifying DS Values: The Values of Digital Scholarship. Retrieved from http://scds.ca/slides-from-demystifying-digital-scholarship-workshop-1/

Morrigan, C. (2017). Trauma Time: The Queer Temporalities of the Traumatized Mind. *Somatechnics, 7*(1), p. 50-58.

Morrisson, T. (2007). *Jazz*. New York: Knopf Doubleday Publishing Group.

Mueller, B. (2019). Bettas Need More Than Bowls. Retrieved from https://vetmed.illinois.edu/pet_column/betta-fish/

Mullaly, B. (2002). *Challenging oppression: A critical social work approach.* 1st ed. Oxford: Oxford University Press.

Müller, J. (2017). Engaging with sensor-based methods for social sciences research is necessary, overdue and potentially rewarding. *London School of Economics Impact Blog.* Retrieved from https://blogs.lse.ac.uk/impactofsocialsciences/2017/04/17/engaging-with-sensor-based-methods-for-social-sciences-research-is-necessary-overdue-and-potentially-rewarding/

Muñoz, J. (2015). Dossier: Theorizing Queer Inhumanisms. *GLQ: A Journal of Lesbian and Gay Studies, 21*(2-3), 209-248.

Muraco, A., Putney, J., Shiu, C., & Fredriksen-Goldsen, K. I. (2018). Lifesaving in every way: The role of companion animals in the lives of older lesbian, gay, bisexual, and transgender adults age 50 and over. *Research on Aging, 40*(9), 859-882. doi:10.1177/0164027517752149

Naisargi, N. (2014). Witness: Humans, Animals, and the Politics of Becoming. *Cultural Anthropology, 29*(3), p. 433-456.

Nancy, J. L. (2014). *Identity: Fragments, Frankness.* New York: Fordham University Press.

National Service Dogs. (n.d.). Retrieved from http://nsd.on.ca/

Netting, E., Wilson, C., & New, J. (1987). The Human-Animal Bond: Implications for Practice. *National Association of Social Workers Magazine*. Washington: NASW, Inc.

Nocella, A. J., Sorenson, J., Socha, K., Matsuoka, A. (2014). *Defining Critical Animal Studies: An Intersectional Social Justice Approach for Liberation*. Bern: Peter Lang.

O'Callaghan, D. M., & Chandler, C. K. (2011). An exploratory study of animal-assisted interventions utilized by mental health professionals. *Journal of Creativity in Mental Health, 6*(2), 90-104. doi:10.1080/15401383.2011.579862

O'Haire, M. (2010). Companion Animals and Human Health: Benefits, Challenges and the Road Ahead. *Journal of Veterinary Behaviour, 5,* 226-234.

Odendaal, J. (2000). Animal Assisted Therapy: Magic or Medicine? *Journal of Psychosomatic Research, 49,* 275-280.

Oggii. (2019). Retrieved from https://oggii.com/

Oliver, K. (2016). The Limits of the "Human": An Alternative Ethics of Dependence on Animals. In Castricano and Corman (Eds.), *Animal Subjects 2.0* (p. 175-202). Wilfred Laurier University Press.

Overall, Karen L. (2018) Dogs aren't jealous – they are just asking for accurate information. *Animal Sentience, 22*(17).

Parish-Plass, N. (2008). Animal-assisted therapy with children suffering from insecure attachment due to abuse and neglect: A method to lower the risk of intergenerational transmission of abuse? *Clinical Child Psychology and Psychiatry, 13*(1), 7-30. doi:10.1177/1359104507086338

Penney, J. (2014). *After Queer Theory: The Limits of Sexual Politics*. New York: Palgrave Macmillan.

Perkins, B. L. (2018). A pilot study assessing the effectiveness of equine-assisted learning with adolescents. *Journal of Creativity in Mental Health, 13*(3), 298-305. doi:10.1080/15401383.2018.1427168

PetPace. (n.d.) Retrieved from https://petpace.com/

Pick, A. (2011). *Creaturely Poetics: Animality and Vulnerability in Literature and Film.* New York: Columbia University Press.

Pico, T. (2017). *Nature Poem.* Toronto: Penguin Random House Canada.

Pitheckoff, N., McLaughlin, S. J., & de Medeiros, K. (2018). "Calm . . . satisfied . . . comforting": The experience and meaning of rabbit-assisted activities for older adults. *Journal of Applied Gerontology, 37*(12), 1564-1575. doi:10.1177/0733464816680322

Policay, Rachel; Falconier, Mariana. (2019). Therapy Dogs in Couple and Family Therapy: A Therapist's Perspective. *Contemporary Family Therapy, 41*(1), 79-91. DOI:10.1007/s10591-018-9472-z

Pollack, S. (2009). Equine-assisted Psychotherapy with Women With Addictions. Unpublished manuscript, Faculty of Social Work, Wilfred Laurier University, Kitchener-Waterloo, Ontario, Canada.

Powell, D. (2013a). *This Isn't About Race: Short Hills, Niagara Action for Animals, Sun Media, and Settler Panic*. Retrieved from http://dylanxpowell.com/2013/08/27/this-isnt-about-race-short-hills-niagara-action-for-animals-sun-media-and-the-settler-panic/

Powell, D. (2013b). Short Hills Should Be a Lesson in Settler Animal Advocacy. *Two Row Times: The Spirit of All Nations*. Retrieved from https://tworowtimes.com/opinions/opinion/short-hills-lesson-settler-animal-advocacy/

Powell, D. (2014). *Veganism in the Occupied Territories: Anti-Colonialism and Animal Liberation*. Retrieved from http://dylanxpowell.com/2014/03/01/veganism-in-the-occupied-territories-anti-colonialism-and-animal-liberation/

Prentice, E. D., Reitemeier, P. J., Antonson, L., Kelso, T. K., & Jameton, A. (1993). Bill of Rights for Research Subjects. *IRB Ethics and Human Research, 15*(2), 7–9. http://doi.org/10.2307/3564581?ref=no-x-route:16b21242558fa8246c9e79b31e62cb97

Prothmann, A., Ettrich, C., & Prothmann, S. (2009). Preference for, and responsiveness to, people, dogs and objects in children with autism. *Anthrozoös, 22*(2), 161-161.

Pschera, A. (2016). Animal Internet: Nature and the Digital Revolution. New Vessel Press: New York.

Putney, J. M. (2012). "Souldog": The perceived impact of companion animals on older lesbian adults. ProQuest, UMI Dissertations Publishing.

Pyne, J. (2016). Queer and Trans Collisions in the Classroom: A Call to Throw Open Theoretical Doors in Social Work Education, in Hillock, S., and Mulé, N. J. (eds.) *Queering Social Work Education*. Vancouver: UBC Press.

QSR Interational Pty Ltd. (2015). What is Nvivo? Retrieved from http://www.qsrinternational.com/what-is-nvivo

Rebick, J. (2009). *Transforming power: From the personal to the political*. Toronto: Penguin Group.

Reichert, E. (1998). Individual counseling for sexually abused children: A role for animals and storytelling. *Child and Adolescent Social Work Journal, 15*(3), 177-185. doi:10.1023/A:1022284418096

Rew, L. (2000). Friends and pets as companions: Strategies for coping with loneliness among homeless youth. *Journal of Child and Adolescent Psychiatric Nursing, 13*(3), 125-132. doi:10.1111/j.1744-6171.2000.tb00089.x

Rigby, K. (2015). Contact Improvisation: Dance with the Earth Body You Have. In Gibson, K., Rose, D. B., Fincher, R. *Manifesto for Living in the Anthropocene*. Brooklyn: punctum books.

Risley-Curtiss, C. (2010). Social Workers and the Human-Companion Animal Bond: A National Study. *National Association of Social Workers Magazine* (p. 38-46). Washington: NASW, Inc.

Risley-Curtiss, C., Holley, L., & Kodiene, S. (2011). "They're there for you": Men's relationships with companion animals. *Families in Society, 92*(4), 412

Risley-Curtiss, C., Holley, L., & Wolf, S. (2006). The Animal-Human Bond and Ethnic Diversity. *National Association of Social Workers Magazine*. (pp. 257-268). Washington: NASW, Inc.

Risley-Curtiss, C., Rogge, M. E., & Kawam, E. (2013). Factors affecting social workers' inclusion of animals in practice. *Social Work, 58*(2), 153-161. doi:10.1093/sw/swt009

Risley-Curtiss, C., Zilney, L. A., & Hornung, R. (2010). Animal-human relationships in child protective services: Getting a baseline. *Child Welfare, 89*(4), 67-82. Retrieved from http://search.proquest.com.ezproxy.library.yorku.ca/docview/865923700?accountid=15182

Risley-Curtiss, C.. Holley, L., Cruikshank, T., Porcelli, J, Rhoads, D., Bacchus, A., Nyakoe, S., Murphy, S. (2006). She was family: Women of color and animal-human connections. *Affilia, 21*(4), 433-447. doi:10.1177/0886109906292314

Rizzo, M., Arfuso, F., Alberghina, D., Giudice, E., Gianesella, M., Piccione, G., 2017. *Monitoring changes in body surface temperature associated with treadmill exercise in dogs by use of infrared methodology*. J. Therm. Biol. 69, 64–68. http://dx.doi.org/ 10.1016/j.jtherbio.2017.06.007.

Robbins, S., Chatterjee, P., & Canda, E. (1998). The nature of theories. In S. Robbins, P. Chatterjee, & E. Canda, *Contemporary human behavior theory: a critical perspective for social work* (pp. 1-24). Boston: Allyn & Bacon.

Robinson, M. (2004). Veganism and Mi'kmaq Legends. *The Canadian Journal of Native Studies, XXXIII*(1), p. 189-196.

Robinson, M. (2014). Animal Personhood in Mi'kmaq Perspective. *Socieities, 4*, 672-688.

Roden, R (2014). *Posthuman Life: Philosophy at the Edge of the Human*. Utrecht: Acumen Publishing.

Rose, D. B. (2015). The Ecological Humanities. In Gibson, K., Rose, D. B., Fincher, R. *Manifesto for Living in the Anthropocene.* Brooklyn: punctum books.

Rose, N. (2007). *The Politics of Life Itself: Biomedicine, Power, and Subjectivity in the 21st Century*. Princeton: Princeton University Press.

Rothberg, B., & Collins, E. (2015). A service dog in group. *International Journal of Group Psychotherapy, 65*(2), 307-315. doi:10.1521/ijgp.2015.65.2.307

Rudy, K. (2011). Clothing Ourselves in Stories of Love: Affect and Animal Advocacy. In Rudy, K. *Loving Animals.* Minneapolis: University of Minnesota Press.

Rudy, K. (2011). From Object to Subject. In Rudy, K. *Loving Animals.* Minneapolis: University of Minnesota Press.

Rushkoff, D. (2011). PLACE: Live in Person. In Rushkoff, D. *Program or Be Programmed: Ten Commandments for a Digital Age.* Brooklyn: Soft Skull Press.

Ryan, T. (2011). *Animals and Social Work: A Moral Introduction*. Palgrave Macmillan: New York.

Sable, P. (1995). Pets, attachment, and well-being across the life cycle. *Social Work, 40*(3), 334.

Sable, P. (2013). The pet connection: An attachment perspective. *Clinical Social Work Journal, 41*(1), 93-99. doi:10.1007/s10615-012-0405-2

School of Graduate Studies (SGS). (2011). Guide for the Preparation of Master's and Doctoral Theses. Retrieved from http://english.humanities.mcmaster.ca/wp-content/uploads/sites/23/2015/04/Guide_for_the_Preparation_of_Theses_May2011.pdf

Sherman Centre for Digital Scholarship (SCDS). (2020). Retrieved from https://scds.ca/what-is-ds/

Seivert, N. P., Cano, A., Casey, R. J., Johnson, A., & May, D. K. (2018). Animal assisted therapy for incarcerated youth: A randomized controlled trial. Applied Developmental Science, 22(2), 139-153. doi:10.1080/10888691.2016.1234935

Shukin, N. (2009). Animal Capital: Rendering Life in Biopolitical Times. Minneapolis: University of Minnesota Press.

Siegel, J. (2011).Pet Ownership and Health. In Chris Blazina, Güler Boyraz and David S. Shen-Miller (Ed.). *The psychology of the human-animal bond: A resource for clinicians and researchers* (pp. 167-177) New York: Springer.

Signal, T., Taylor, N., Prentice, K., McDade, M., & Burke, K. J. (2017). Going to the dogs: A quasi-experimental assessment of animal assisted therapy for children who have experienced abuse. *Applied Developmental Science, 21*(2), 81–93. https://doi-org.libaccess.lib.mcmaster.ca/10.1080/10888691.2016.1165098

Singleton, R. A., and Straits, B. C. (2010). *Approaches to Social Research* (5th ed.). Oxford: Oxford University Press.

Slatter, J., Lloyd, C., & King, R. (2012). Homelessness and Companion Animals: More than Just a Pet? *British Journal of Occupational Therapy*, *75*(8), 377-383

Smith, H. P. (2019). A rescue dog program in two maximum-security prisons: A qualitative study. *Journal of Offender Rehabilitation, 58*(4), 305-326. doi:10.1080/10509674.2019.1596189

Smuts, B. (2001). Encounters with Animal Minds. *Journal of Consciousness Studies, 8*(5-7), 293-309(17).

Smuts, B. (2006). Between Species: Science and Subjectivity. *Configurations, 14*(1-2), 115-126.

Smuts, B. (2007). Cooperation and competition during dyadic play in domestic dogs, Canis familiaris. *Animal Behaviour, 73*(3), 498-499. DOI: https://doi.org/10.1016/j.anbehav.2006.09.006

Sobo, E. J., Eng, B., & Kassity-Krich, N. (2006). Canine visitation (pet) therapy: Pilot data on decreases in child pain perception. *Journal of Holistic Nursing*, *24*(1), 51.

Sorenson, J. (2014). Thinking the Unthinkable. In Sorenson, J. (ed.). *Critical Animal Studies: Thinking the Unthinkable*. Toronto: Canadian Scholars' Press.

Spiegel, M. (1988). *The Dreaded Comparison: Human and Animal Slavery*. Heretic.

Supporters of the Haudenosaunee Right to Hunt. (n. d.). Background Information. Retrieved from https://sixnationsrighttohunt.com/background/

Swan, M. (2013). The Quantified Self: Fundamental Disruption in Big Data Science and Biological Discovery. *Big Data, 1*(2). http://doi.org/10.1089/big.2012.0002

Taylor, N. (2014). Social Work, Animal-Assisted Interventions, and Ethical Considerations: A Programme Example from Central Queensland, Australia. *British Journal of Social Work*. DOI: 10.1093/bjsw/bcu115

Taylor, S. (2017). Beasts of Burden. New York: The New Press.

The R Foundation. (n.d.). What is R? Retrieved from https://www.r-project.org/about.html

Thevenot, L. (2002) Which Road to Follow? The Moral Complexity of an "Equipped" Humanity. In Mol, A., and Law, J. (eds), *Complexities: Social Studies of Knowledge Practices*. Durham: Duke University Press.

Thodberg, K., Sørensen, L. U., Videbech, P. B., Poulsen, P. H., Houbak, B., Damgaard, V., . . . Christensen, J. W. (2016). Behavioral responses of nursing home residents to visits from a person with a dog, a robot seal, or a toy cat. *Anthrozoös, 29*(1), 107-121. doi:10.1080/08927936.2015.1089011

Thom, Kai Cheng [razorfemme]. (2019). All of this. Can we imagine a way of setting & defending our boundaries in a way that is not punitive or vengeful? Are we able to maintain our bodily & psychological integrity while also remaining open to connection? What would a community based on indispensability look like? [tweet]. Retrieved from https://twitter.com/razorfemme/status/1148608658022047744

Thompson, C. (2002) When Elephants Stand for Competing Philosophies of Nature: Amboseli National Park, Kenya. In Mol, A., and Law, J. (eds), *Complexities: Social Studies of Knowledge Practices.* Durham: Duke University Press.

Trammell, J. P. (2017). The effect of therapy dogs on exam stress and memory. *Anthrozoös, 30*(4), 607-621. doi:10.1080/08927936.2017.1370244

Tuan, Y. (1984). *Dominance and affection: The making of pets*. New Haven: Yale University Press.

Turkle, S. (2012). *Alone Together: Why We Expect More From Technology and Less From Each Other.* New York: Basic Books.

Unitarian Universalist Association (UUA). (1993). *Singing the Living Tradition.* Boston: Unitarian Universalist Association.

van Dooren, T. (2015). Vulture Studies: Narrative and Conservation. In Gibson, K., Rose, D. B., Fincher, R. *Manifesto for Living in the Anthropocene.* Brooklyn: punctum books.

Villalta-Gil, V., Roca, M., Gonzalez, N., Domènec, E., Cuca, Escanilla, A., Asensio, M. R., Esteban, M. E., Ochoa, S., Haro, J. M., Schi-Can Group. (2009). Dog-Assisted Therapy in the Treatment of Chronic Schizophrenia Inpatients. *Anthrozoös, 22*(2), p. 149-159.

Voyce. (2019). Retrieved from https://www.voyce.com/

Walker, P., & Tumilty, E. (2018). Developing Ethical Frameworks in Animal-Assisted Social Service Delivery in Aotearoa New Zealand. *British Journal of Social Work*, *49*(1), 163–182. http://doi.org/10.1093/bjsw/bcy020

Walsh, F. (2009a). The Role of Pets in Family Systems and Family Therapy. *Family Process, 48*(4), 481-499.

Walsh, F. (2009b). The Relational Significance of Companion Animals. *Family Process, 48*(4), 462-479.

Wells, D. (2019). The State of Research on Human–Animal Relations: Implications for Human Health. *Anthrozoös, 32*(2), p. 169-181.

Wesley, M., Minatrea, N. B., Watson, J. C. (2009). Animal-Assisted Therapy in the Treatment of Substance Dependence. *Anthrozoös, 22*(2), p. 137-148.

Whistle. (n.d.). Retrieved from https://www.whistle.com/

White, K. (2019, July 3). Engaging and enraging in the Anthropocene: an Indigenous perspective [presentation]. Decolonizing Animals 2019, Ōtautahi (Christchurch), Aotearoa (New Zealand). https://www.youtube.com/watch?v=WcwHThjtRIM

Wigget-Barnard, C., & Steel, H. (2008). The Experience of Owning a Guide Dog. *Disability and Rehabilitation 30*(14), 1014-1026.

Wilbur and Keene. (2020). *All My Relations* [audio podcast]. Retrieved from https://www.allmyrelationspodcast.com/

Wilson, S. (2008). *Research is Ceremony*. Halifax: Fernwood Press.

Wilson, T. (2016). Repairing what's left in social work, or, when knowledge no longer cuts. *British Journal of Social Work, 47*(5). DOI: 10.1093/bjsw/bcw114

Wilson, C. and Barker, S. 2003. Challenges in designing human-animal interaction research. *American Behavioral Scientist, 47*(1), p. 16-28.

Wlodarczyk, J. (2018). Genealogy of Obedience: Reading North American Dog Training Literature 1850s-2000s. Brill: Leiden.

Wolf, D. (2000). Social work and speciesism. *Social Work, 45*(3), 88-93.

Wolf, D. B. (2000). Social Work and Speciesism. *Social Work, 45*(1), 88–93.

Wolfe, C. (2014). A New Schema of Politicization: Thinking Human, Animal and Biopolitics with Foucault. In Faubion, J. (ed.). *Foucault Now*. Cambridge: Polity Press.

Worboys, M. (2018). Inventing Dog Breeds: Jack Russell Terriers. *Humanimalia, 10*(1), n.p.

Yeatman, A. (2015). The Human Condition in the Anthropocene. In Gibson, K., Rose, D. B., Fincher, R. *Manifesto for Living in the Anthropocene.* Brooklyn: punctum books.

Zilney, L. A., & Zilney, M. (2005). Reunification of child and animal welfare agencies: Cross-reporting of abuse in Wellington county, Ontario. *Child Welfare, 84*(1), 47-66.

Appendix A: All Watched Over by Machines of Loving Grace, by Richard Brautigan (1967)

I like to think (and
the sooner the better!)
of a cybernetic meadow
where mammals and computers
live together in mutually
programming harmony
like pure water
touching clear sky.

I like to think
(right now, please!)
of a cybernetic forest
filled with pines and electronics
where deer stroll peacefully
past computers
as if they were flowers
with spinning blossoms.

I like to think
(it has to be!)
of a cybernetic ecology
where we are free of our labors
and joined back to nature,
returned to our mammal
brothers and sisters,
and all watched over
by machines of loving grace.

Appendix B: Eligibility Questionnaire for Study Participants

- Do you currently live or volunteer in Southern Ontario?
- Is there a social worker involved (in any capacity) in the work that you do with your dog? If so, are you able to provide them with the recruitment materials for the study (I will send these to you if so!)?
- Are you willing to participate in an audio recorded interview and have a researcher (me!) come visit you when you and your dog are working?
- Is your dog comfortable wearing an adjustable chest harness? If so, can you tell me a little bit about your dog (approximate size, breed if known, comfort being touched by a stranger)?

Appendix C: Interview Guide

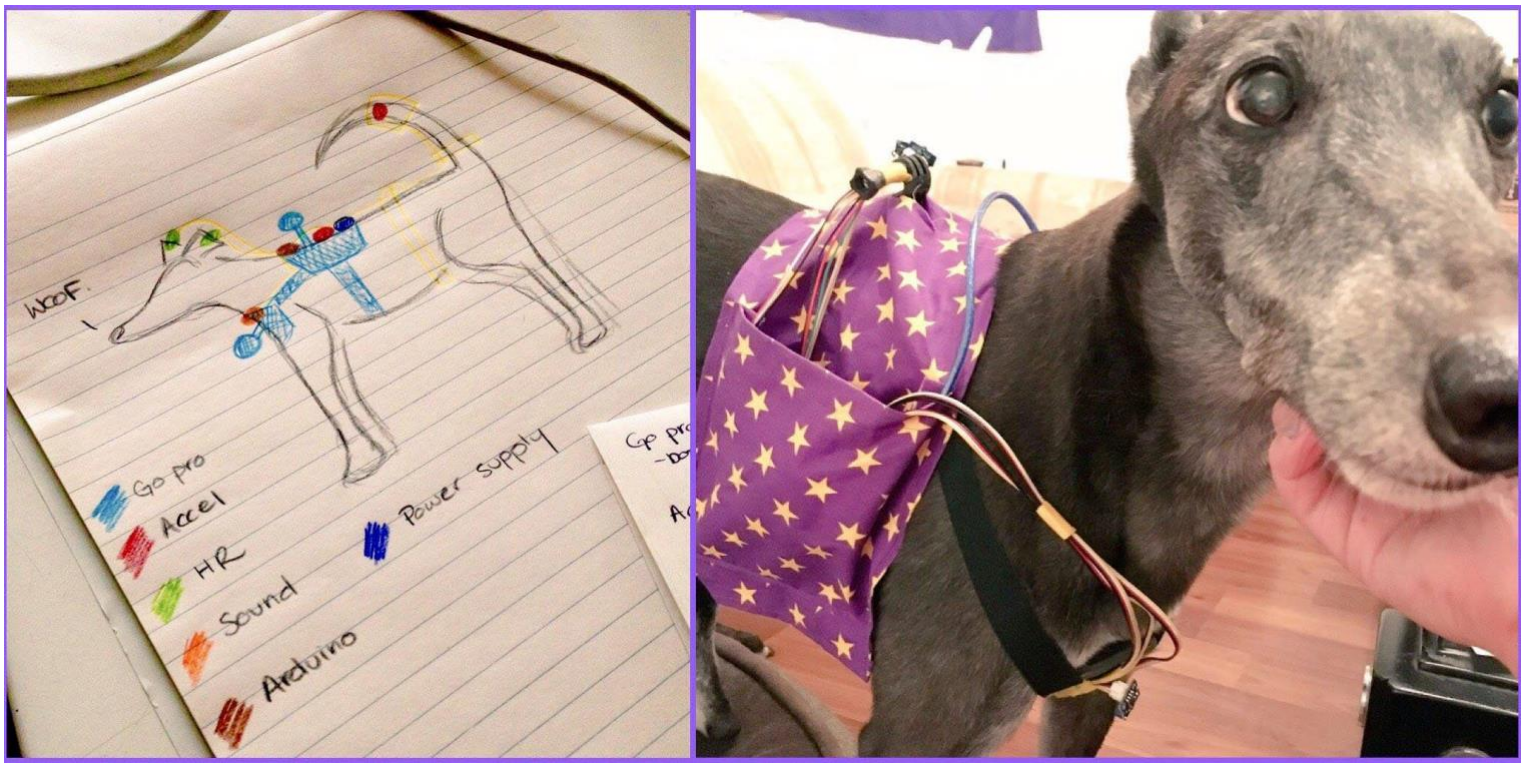
The following interview guide is based on Patton's model of critical ethnographic interviewing, as described in Madison (2012). In parenthesis at the beginning of each question, the category of question is indicated. There is one question per category for the Patton model, as well as two additional categories suggested by Madison (2012), advice questions and once-upon-a-time questions. While this guide is intended for a semi-structured interview, the questions are written in the order that I anticipate asking them, rather than the order in which the categories are described in the Madison (2012) text.

1. (Knowledge/Background) Please describe your experience and relationship with the animal who you work with.
2. (Once-Upon-A-Time) Can you describe a typical AAI session for you and the animal who you work with?
3. (Behaviour) Can you please describe for me how the animal who you work with usually acts when they are working with people (AAI)?
    a. Is this behaviour consistent, or does it sometimes vary?
    b. If you have experience with the animal outside of this context, can you describe any differences in behaviour that you notice compared to when the animal is involved in other kinds of activities?
4. (Opinion) Can you describe some of the benefits or drawbacks that you think the animal who you work with may experience being involved in AAI?
5. (Feeling) How do you think the animal who you work with feels about being involved in AAI?
6. (Feeling/Sensory) How does it feel for you when you are working with this animal?
    a. Can you describe your physical/sensory experience, as well as your emotional experience?
    b. What do you think the physical experience of AAI is like for the animal you work with?
7. (Knowledge) Do you have specific training in working with animals, or using AAI?
    a. Do you feel that this training (or lack of training) impacts your work with the animal who you work with?
    b. How?
8. (Advice) What advice would you give to other people who want to work with AAI?
    a. What would you tell someone else if they were going to work with the animal who you work with?

Appendix D: Thematic Codebook

behaviours while working
breed
celebrity status
dog agency
dog personality and character traits
dog professionalism
dog training
dog work cues
greeting
human training
interspecies relationships
lifestyle change
novelty
organizational challenges
physical dog work environments
physical needs
types of dog jobs
uses for dogs

Appendix E: Sensor Package Prototype (Visual Media)



Appendix F: Letter of Information and Consent

LETTER OF INFORMATION / CONSENT

A Study About Experiences of Dogs Involved in Social Work Practice

Principal Investigator:
Melissa Marie Legge
School of Social Work
McMaster University
Hamilton, Ontario, Canada
(905) 525-9140 ext. 23795
E-mail: leggemm@mcmaster.ca

Faculty Supervisor:
Dr. Bonnie Freeman
School of Social Work
McMaster University
Hamilton, Ontario, Canada
(905) 525-9140 ext. 21447
Email: freeman@mcmaster.ca

Purpose of the Study: I am a social worker seeking participants for a graduate research study about what dogs experience when they work with us. I am hoping to learn about what dogs who are involved in social service provision experience, and how to make these experiences the best that they can be. I am doing this research for my doctoral dissertation.

Procedures involved in the Research: In this study, I hope to work with social workers, dog owners, and dogs involved in providing social services. I also hope to speak with people who are involved in the services these dogs provide. I hope to conduct 30-90 minute interviews with social workers and dog owners to ask them about their experiences providing social services with the help of dogs. The interview guide is attached. All interviews will be conducted by me, in a community or professional environment of your choosing, or over the phone. With your permission, these interviews will be audio-recorded.

After the interview, I would like to visit the dogs at work. I will use an activity tracking harness with the dogs to gather some information about their experience of their work. This harness collects data about the dogs, for example, how quickly the dogs move, and about the environment, for example, how much noise there is. The harness does not record any audio, video, or pictures. While the dogs work, I will observe the work and take some handwritten notes, and if there is an opportunity to talk with people who the dogs work with, I will ask a few

questions about their experiences (see attached Interview Guide). With your permission, these interviews will be audio-recorded.

Potential Harms, Risks or Discomforts: The risks involved in participating in this study are minimal. Any research that involves the participation of animals involves some physical risk, however these risks should not be greater than the regular risks associated with working with the dogs involved. In addition, being observed by a researcher and answering interview questions can be uncomfortable for some people. You do not need to answer questions that you do not want to answer or that make you feel uncomfortable, and I will be prepared to end the observation and leave at any time. I describe below the steps I am taking to protect your privacy.

Potential Benefits: This study will not benefit you directly. It may benefit the dogs who help social workers provide services, and improve their work experiences. Participation may also benefit people who work with animals in social services settings, both through greater recognition of this emerging field of practice, and through improving practices.

Confidentiality: Every effort will be made to protect your confidentiality and privacy. I will not use your name or any information that would allow you to be identified. However, we are often identifiable through the stories we tell. Since there is a small number of social workers who work with dogs to provide services, others may be able to identify you based on references you make. Please keep this in mind in deciding what to tell me. The information you provide will be kept on a computer and will be protected by a password. Participant information and coding lists will be stored and backed up in separate, encrypted documents on external flash drives, also password protected with XTS-AES 128 encryption. Once the study has been completed, all identifying information and audio recordings will be destroyed. All data will be destroyed in a maximum of ten years following this study (August of 2029).

Legally Required Disclosure: Although I will protect your privacy as outlined above, if the law requires it, I will have to reveal certain personal information (e.g., child abuse, public health risk).

Participation and Withdrawal: Your participation in this study is voluntary. It is your choice to be part of the study or not. If you decide to be part of the study, you can stop at any time, for any reason, even after signing the consent form or part-way through the study. If you decide to withdraw, there will be no consequences to you. In cases of withdrawal, any data you have provided will be destroyed. If you do not want to answer some of the questions you do not have to, but you can still be in the study.

Information about the Study Results: If you would like a summary of the results, please let me know how you would like it sent to you. Dog owners will also have access to the sensor data that has been collected from their pets, although the data may be in a format that is difficult to interpret by a layperson.

Questions about the Study:

If you have questions or need more information about the study itself, please contact me at: leggemm@mcmaster

This study has been reviewed by the McMaster University Research Ethics Board and received ethics clearance. If you have concerns or questions about your rights as a participant or about the way the study is conducted, please contact:

McMaster Research Ethics Secretariat
Telephone: (905) 525-9140 ext. 23142
C/o Research Office for Administrative Development and Support
E-mail: ethicsoffice@mcmaster.ca

CONSENT

- I have read the information presented in the information letter about a study being conducted by Melissa Marie Legge of McMaster University.
- I have had the opportunity to ask questions about my involvement in this study and to receive additional details I requested.
- I understand that if I agree to participate in this study, I may withdraw from the study at any time.
- I have been given a copy of this form.
- I agree to participate in the study.

Signature:_____Date: _____

Name of Participant (Printed) _____

1. I agree that the interview can be audio recorded.
… Yes.
… No.

2. …Yes, I would like to receive a summary of the study's results.
Please send them to me at this email address _____
Or to this mailing address: _____
_____
_____

… No, I do not want to receive a summary of the study's results.

3. I agree to be contacted about a follow-up interview, and understand that I can always decline the request.
... Yes. Please contact me at: _____
... No

Appendix G: Recruitment Emails

Organization Email

Dear (name: representative of service organization),

My name is Melissa Marie Legge, and I am a third year doctoral student from McMaster University. For my dissertation project, I am doing a research project about the experiences of dogs and social workers who work together to provide social services. I know that your organization is involved in this field of practice. I am currently seeking participants for this study, and I am wondering if you would be willing to circulate my recruitment flyer through your Email network or social media outlets. Thank you in advance, and I look forward to your response!

Sincerely,
Melissa Marie Legge
leggemm@mcmaster.ca

Service Provider Email

Dear (name: social worker),

My name is Melissa Marie Legge, and I am a third year doctoral student from McMaster University. For my dissertation project, I am doing a research project about the experiences of dogs and social workers who work together to provide social services. I know that you are involved in this field of practice, I am currently seeking participants for this study, and I am wondering if I could send you my recruitment flyer. Thank you in advance, and I look forward to your response!

Sincerely,
Melissa Marie Legge
leggemm@mcmaster.ca

Dog Owner Email

Dear (name: dog owner),

My name is Melissa Marie Legge, and I am a third year doctoral student from McMaster University. For my dissertation project, I am doing a research project about the experiences of dogs and social workers who work together to provide social services. I know that you are the owner of a dog who may be involved in this field of practice. I am currently seeking participants

for this study, and I am wondering if I could send you my recruitment flyer. Thank you in advance, and I look forward to your response!

Sincerely,
Melissa Marie Legge
leggemm@mcmaster.ca

Appendix H: Recruitment Flyer

Appendix I: AREB Exemption Letter

McMaster University
CAF Dept., Health Sciences Centre 1U29
1280 Main Street West, Hamilton, Ontario, Canada L8S 4K1
Telephone: (905) 525-9140, Ext. 22365 Fax: (905) 522-3580

Melissa Marie (emmy) Legge, BSW, MSW, PhD (c.)

McMaster University

Dear Ms Legge,

On behalf of the Animal Research Ethics Board (AREB) we wish to inform you that Dr. Labiris (Chair AREB) and I do not feel it is necessary to have ethics approval for your AAI study with the School of Social work for the following reasons:

- The animals will not be on campus
- The animals are privately owned and owner consent will be required
- The project does not involve any manipulation to the dogs just an external device.

That being said it is our recommendation that you ask for the following 2 items:

- Updates rabies vaccination certificate prior to working with the dogs
- A signed informed consent by the dog's owners.

We wish you the best of luck with your project.

Regards,

Kathleen Delaney BSC. DVM. Dip.Pathol.
Executive Director Animal Facilities
University Veterinarian
Assistant Professor Pathology and Molecular Medicine
McMaster University
CAF Department, 1280 Main Street West ,Room 1U23A FHS, Hamilton ON L8S 4K1
905-525-9140 ext 22812
delaneyk@mcmaster.ca

cc: R. Labiris.

Appendix J: Posthumanism in Action Wiki, GreyhoundSensorRig Project Page

From Posthumanism in Action

Main: GreyhoundSensorRig

AKA, Quantified Dog
AKA, Dissertation Data Collection

Overview

The goal of this project is to build a test rig to mount all of the sensors that I want to use to monitor biodata from dogs providing social services on. The test rig will be for use with my greyhounds. The aim of this project is to see whether this is a feasible project, what kind of data can be collected, and if this system might be useful as part of data collection for my dissertation project.

Components in Bin

Arduino Uno
Grove Base shield 2.0

Grove 3-Axis Digital Accelerometer Grove 3-Axis Analog Accelerometer Grove ear clip heart rate sensor Grove Loudness Sensor

4 pin Universal cable, 20 cm (x5)
4 pin Universal cable, 30 cm (x5)
4 pin Universal cable, 50 cm (x5)
16gb micro SD cards w adaptors (x2) **Grove blue LEDs** as indicator lights (x10)

power bank
Elecrow RTC Data Logger Shield

Vendor List

Seeed Studios, Canada Computers (for power bank), Creatron (for data shield)

Progress

July 13

I was glad that I **tweeted my sketch-up**, because I managed to lose my hard copy
pulled out all the components that I need for this project, tested and not: Arduino and base shield, data logging shield, power source, GoPro, heart rate sensor, 2 3-axis digi accelerometers
plugged in power source and GoPro to charge

Hello World tested the Arduino (same as **here**) test successful!

plugged in Grove shield
went back to the **accelerometer wiki**, and plugged in one accelerometer in I2C port test successful!

started researching connecting two I2C sensors on the same base shield
read [**http://www.switchdoc.com/2016/02/tutorial-intro-to-grove-connectors-for- arduinoraspberry-pi-projects/** | this tutorial]] on Grove connectors, and while reading, got this message from sen (who was being helpy!): assuming they're both digital I2C accelerometers, it looks like the Grove stuff doesn't support that and would need some hardware and software modifications to make that work

decided to throw the extra accelerometer into the bin for now and Email Grove support

went to the **loudness sensor wiki** to test test successful!

learned from sen that it would be possible to use a digital accelerometer and an analog one simultaneously on the Grove shield, so decided to test the analog accel
accessed the **analog accelerometer wiki**
for reference - pins on Arduino, L to R w power source to the left: unmarked, ioref, reset, 3.3V, 5V, GND, GND, Vin / A0, A1, A2, A3, A4, A5

calibration of analog accelerometer threw errors that I'm not sure how to fix, so I'm going to test the heart rate monitor and add this to the to do list for next time

testing the **ear clip heart rate sensor**, this time with blue LED
code was not functional - demo code was for chest strap sensor
also checked w code in the **PDF manual**, and same outcome
will try to see if I can find demo code for this next time, not sure why it's not working this time when it worked fine before?

July 21 (with help from sen!)
troubleshooting the heart rate sensor - sensor cord wasn't plugged in all the way, once plugged in it worked just fine
calibrating analog accelerometer just didn't throw errors this time (no idea why)

once the calibration was complete, had to edit the library file as indicated on the **wiki**, which was located in Documents>Arduino>libraries>AnalogAccelerometer>ADXL335.h

testing the **data logger shield**
important!: The RTC Data Logger Shield v1.1 makes use of pin 4 as a chip select. Please be sure other stacked shields do not make use of that same pin.
tested using File>Examples>SD>CardInfo

test successful!
testing the RTC using File>Example>RTC>RTC

test successful! Note that in the example sketch, "RTC is NOT running!" actually just means that the RTC is initializing (ie, getting the time from the computer)

July 26 2016
today's mission is to figure out how to begin connecting all these sensors together! it's an adventure!

started by stacking all the shields, and pulling up the **wiki page for the digital accelerometer** and the **data logger shield**
quickly realized that I have no idea how to write data to the SD card using the shield, but found that there was a **data logger example in the Arduino software, and a little tutorial online** that I could use as a starting point

decided that in this case, I'd start with the analog accelerometer, since the data logger example was for use with three analog sensors
modified the data logger code to include the **library for the accelerometer**
things that I read/learned trying to write this code:

googled "CS pin" - summary: "In short, the chip select is an access-enable switch. "ON" means the device responds to changes on its input pins, and drives any output pins (possibly not at the same time), while "OFF" tells the device to ignore the outside world for both inputs and outputs."
CSV file = comma separated values file, which sen said that "it's the simplest data format that basically everything can load (excel/openoffice/Google sheets/kst2/etc)"
re: where to put the things in the code, from sen: usually at the top of loop() you would have the bits that fetch data from each of your sensors and puts it into variables, then below that you'd have the datalogging part that turns that data into a string and puts it on the SD card, then you'd usually wait X amount of time (like a second, if you want to log data once a second)

downloaded the **measuring acceleration** demo code
integrated the measuring acceleration demo code and the data logger code into the sketch Integration 1 and saved it after successful verification!

August 3 2016
continuing to work on integration code w helpy help from sen

tested the Integration 1 code with the hardware, and successfully pulled values from the analog accelerometer to the SD card
sen troubleshot my code and pointed out that in the data logging loop, I was pulling the wrong data from the

sensor to write to the card (String(sensor) versus String(ax), String (ay), and String (az)) modified the code to write the proper variables to the SD card, and saved as Integration 2

in this version, there is no loop through each analog pin, because the variables are individually

identified, so there's no need to go through the pins one by one
tested Integration 2, and totally worked. yay!
pulled the demo code for the digital accelerometer from its **wiki page**, and tried combining it with Integration 2. threw some errors because I was doubling up on variables, which was easy enough to fix, and sen pointed out that I didn't need to include serial.println for each sensor, because that was already happening through the data logging shield at the end of the code. removed all the extra instances of that, which simplified the code significantly. re-saved as Integration 3.
once I simplified the code and fixed the variables, Integration 3 verified!
in order to have the data from the digital accelerometer logged by the data shield, I attempted copying the data logger code for the analog accelerometer, and modifying the variables (ax, ay, az) to those relating to the digital accelerometer (dax, d_ay, daz)

saved as part of Integration 3, and verified successfully
Integration 3 uploaded just fine and was showing data in the serial monitor (yay!), but there were a bunch of unidentifiable zero values, so not ideal

data pulled from the SD card was the same

sen found a couple of more variable problems, so I fixed those and tried again
data from the analog accelerometer worked fine this time, but the digital one was still throwing zeros, so I ran the example code for just the digital accelerometer to make sure it was working when I ran the demo code, I still got only zeros, and sen noticed that the data logging shield was missing pins to allow the I2C data to get to the Arduino. first step for next time will be to retrieve some jumper cables from my Hacklab bin stash, and jump the I2C pins down to the Arduino (skipping the data shield), and then it should work just fine

I feel like it's worth memo-ing at this point that next time I decide to work on a project with a new coding language, it's *probably* worth the ten or so hours at the beginning to do a quick tutorial and learn some of the language first. sen is helping me skip lots and lots of steps just by being more C-literate than I am right now, and that probably could have been avoided.

August 7
continuing to work on integration code w helpy help from sen today, starting with heart rate sensor!

Memo: Things that basic wikis should tell newbies that would lower the barriers to entry: when you plug in multiple sensors to a shield, you don't need to unplug everything to test them. you can test one at a time.
tested the heart rate sensor with its own code, and it worked fine

with some help from sen, I integrated the heart rate sensor code into Integration 3 (saved as 3b), and it verified on the second try! (I still feel victory EVERY time I don't throw a thousand errors) commented out all the Serial.println, except Serial.print("Heart_rate_is:\t"); Serial.println(heart_rate); to simplify the code

after asking sen, I added the heart_rate variable to the code where the data shield is pulling data from the sensors, and everything verified properly: Integration 4!
next step - test to make sure everything is working properly

September 4 2016
successfully tested loudness sensor using **test code from wiki**
switched data logging shield and Grove base shield (temporarily?) to deal with the I2C pin problem described above
tested digital accelerometer (successfully) using example code
integrated loudness sensor code, saved as Integration 5, which verified on the second try!
tested Integration 5 (all sensors!) with the data logging shield, and everything logged successfully!

Post-Proposal Approval Redux (Progress 2)

January 17 2017
uploaded Arduino sketch from September 4th and everything appears to be working as well as it was before, which is great
checked the SD card and it had logged data
tested the heart rate sensor on **Kiki Hacker**. Good news: she didn't mind wearing the ear clip. Bad news: she was too floofy to have a heart rate.
cleaned up the code and comments so that it's more understandable
tested the heart rate sensor on tiny dog Wren. Only bad news.

February 16 2017
consulted with ABC friends re: dog-friendly heart rate and other biodata sensor options

suggestion: watch the **BBC documentary on Russian space dogs** to see if there's useful information about their space suits (content warning that this is incredibly sad because the dogs don't survive)
suggestion: use **stretch sensors aka conductive rubber** as a proxy breath rate sensor

checked online and conductive rubber and CR1220 coin cells (the batteries required for the RTC in the data logging shield are CR1225s, but these should work) are both available at Creatron removed the heart rate sensor from the hardware and commented out the code (for potential future use with humans)

learned to comment out blocks of Arduino code by doing "/*" at the beginning of the block and "*/" at the end of the block, rather than // at the beginning of every line
code verified correctly, saved as Integration_6 on desktop
updated **Git**

did a **Hello, World!** test with the Grove LEDs (LED was doin a blink) next steps:

integrate the indicator lights into the Arduino code

reference 1

reference 2

RTC

March 9 2017
Tonight, I'm just musing about some things. I was considering if I'm missing any sensors that it would make sense to add to this package. I thought about temperature sensors, but sen pointed out to me that there would be a lot of pollution from environmental temperature changes that would probably mean that the data wouldn't be meaningful. I thought about maybe taking temperature readings throughout with like an ear thermometer or something, but I think that then the data would feel less meaningful, in that it wouldn't be as organically created by the dog and the environment - there would be a lot more interference from me. I think in order to feel like I'm being genuine to the research-creation methodology, I want to sort of just let the dog and the environment do their thing, and to have the data to look at afterward. It does occur to me, though, that the loudness sensor is going to have similar levels of pollution from the environment (even though I guess sharp peaks in loudness can be more easily interpreted - barks - than sharp changes in temperature can). I'm browsing the Seeed website, and the only other thing that sticks out as even really having relevance could be a light sensor? I'm not sure what that would tell you, other than adding another environmental data point. Could be worth it, if it's easy to get? The only thing is that all of the other sensors have to do with the dog. A light sensor would be the only environmental sensor to not have any sort of interaction with the dog.

April 15 2017
tested the conductive rubber as a breathing sensor using a multimeter, but unfortunately the rubber isn't sensitive enough to measure the resistance of breathing in a meaningful way.
integrating indicator lights

re-tested Hello, World with Grove LED, and it worked just fine
for each sensor, I want an indicator light that will turn on when the sensor starts sensing some kind of meaningful data

three sensors: digi accel, analog accel, and loudness - for accelerometers, the data is output in units of g (where each g is 1x the force of gravity), so this would be +-1g, and for loudness it looks like a reasonable bar is anything above 10 (it looks like this is measured in volts, which I don't know a ton about)
using **this resource** as a starting point for the code
tip: (fr sen) double pipe (||) is an OR operator in Arduino code
removing heart rate sensor code because it's not useful and it's in my way, so that's going to be gone in Integration 7
using analog accelerometer for first test

commented out some of the analog accelerometer setup code where variables x, y, and z were being created, because they don't seem to be being used for anything
on first test (code verified and uploaded fine), no matter what values I give to the variables (tried 2 and 500), the LED is always on. tried troubleshooting and no luck, going to try with the same LED (pin 2), but loudness as test sensor since I have much more control over the data that gets picked up

second test, same thing
sen suggested commenting out the LED code to see if the LED still turned on, and it did. so something other than the LED code is using pin 2

next step: figure out what is using pin 2, and if I should use another pin for the LED, or if this can be adjusted

May 14 2017

Today, I'm creating a to do list of what needs to be finished on this sensor package so that I can get an idea of when I can begin recruitment for this study. I had considered adding additional sensors. Below are the criteria I used for additional sensors. I found no additional bio sensors that fit these criteria. However, I did find some additional environmental sensors (temperature, light).

available (plug and play, through Grove)
affordable
would give data that seems meaningful to a dog's experience in a therapeutic environment would be feasible for non-invasive use with dogs
would be non-invasive to human service users in a therapeutic environment for data collection would comply with what I had approved through the REB

Memo: It's interesting that when I started off this project, I really wanted to focus more on biodata, and the environmental was just going to be kind of icing. However, given the constraints of the project and taking into consideration the priorities I set about being non-invasive, I'm really ending up focusing more on environmental data. It's making me wonder if some of the reading that I've done (especially around cyborgism, etc) isn't going to be a bit superfluous in the end, and if I should be looking more at theoretical texts around a slightly different kind of analysis.

the following are the steps that I need to complete in order to be able to begin using the sensor package for data collection

(2) first, through looking at the package to compile this list, I determined with advice from sen that I had mistakenly attached my analog accelerometer and my loudness sensor (also analog) to the same analog pins on the Arduino - this maybe explains why the indicator LED wasn't working, since I had been testing it with the analog accelerometer, so I need to go back to my code and make that adjustment so that I can move the loudness sensor so that both of these will work. so that's step one (but actually step two, because it's harder to do than ordering, which comes next...)

(1) order additional sensors (temp, light) (3) add additional sensors to the code
(4) add indicator LEDs to all five sensors

(5) create physical attachments for these
(6) create physical attachments for all lights and sensors

(7) add velcro and elastic to tail accelerometer
(8) attach loudness, body accelerometer, temperature, and light sensors and indicator LEDs to the harness

(9) organize cables, make a case for the Arduino package (10) test the coin cell battery with the RTC

(11)make sure that the timestamp is being recorded with the data in a single file on the

SD card while the package is running (12) test entire package

May 14 (continued)

Step One: Ordering Additional Sensors
Memo: Once I had shifted my focus to environmental rather than biometric sensors, there are a lot more things available. Cost of CO2 sensors was way too high. I looked into an air quality sensor, but it's an analog sensor and I don't have any analog pins left. this doesn't seem like the highest priority sensor to me, as it's unlikely that there would be wild variations in air quality in relatively contained environments. sen pointed out that it uses a lot of power as well.
in the end I decided to order (based on availability, cost, perceived usefulness, compatibility with existing package - particularly in terms of not having any analog ports available) the parts below, allowing me to add temperature, humidity, barometric pressure, and light measurements to my data collection

Grove temperature and humidity sensor Grove barometer

Grove digital light sensor

step one complete! eleven steps remain...

May 19
After reviewing the first few recruitment Emails, I'm going to have to add a step 13 to modify this package to be usable with smaller breeds of dog - so far no one who's contacted me (of 13 Emails) has a large breed. this could be tricky!

September 5
I have been taking memos in a separate document, and plugging away on things like recruitment and initial interviews for this project. However, in the shuffle of things, I lost track of time, and my first site visit for data collection is this coming Monday! I'm excited, and also, I need to get this sensor package functional. Luckily, the dog that I'm visiting for the first set of visits is a medium breed dog, so I don't need to miniaturize just yet. That said, here is my (new, condensed) to do list for this coming week (!):

(1) put analog accelerometer and loudness sensor on different pins on the Arduino so they will both work
(2) add the following sensors to the code

(2.1) **Grove temperature and humidity sensor** (2.2) **Grove barometer**
(2.3) **Grove digital light sensor**

(3) create physical attachments for all sensors, including velcro and elastic for tail accelerometer
(4) organize cables
(5) test the coin cell battery with the RTC

(6)make sure that the timestamp is being recorded with the data in a single file on the SD card while the package is running
(7) test entire package

October 23
I am returning to this in a long-overdue kind of way, as I have my first data collection visits in a week and a half, so I'll be banging through this to do list in the next few days, as well as attempting to miniaturize the package and harness so that it can be used with dogs who are quite smol
To Do list progress

(1) moved loudness sensor to analog pin 3, altered code (analogRead(3)) to reflect the change (2.1) adding **temperature and humidity sensor** to the code

the example code provided here didn't work, because it uses an analog pin for input, despite being a digital sensor, and as evidenced by point 1 on the to do list, I've already used up my analog pins (which is why I ordered a digital sensor on purpose)
in order to change to using a digital sensor, I asked for help and learned that this code is not well-written in terms of entry level usability. It's written this way in order to talk to the chip quickly. The code avoids the digitalRead command, which would be too slow,

October 29

but it's also sloppily written. The port is not defined at the top where the chip is defined, it's rather hard coded throughout, making it more difficult to change. In this case, I'm just going to change it throughout, because I'm not going to go back to use the chip as analog for this project, but the sample code itself would be easier to use if it was written more cleanly.

Note: DHT11 is the sensor that I'm using, and I'm using digital pin 5
Memo: TIL: It's not just Seeed that provides resources for various sensors, even though the Grove system that they've created has the chips mounted in a really easy-to-use way and has created the shield which really facilitates this. Adafruit provides this same sensor (DHT11), and the code provided by them includes a library that makes it much easier to use. A note for future is to look for Adafruit sample code first, because theirs is usually higher quality at an entry level than what is provided through the Seeed wiki. Adafruit puts a lot of effort into this, as a company, and that's probably why their code is more accessible.

Adafruit code for the temperature and humidity sensor, for when I come back to this

Tonight, my goal is to finish integrating all the remaining sensors. Good luck, me. To do list item 2.1 continued!

this time, I'm starting with the Adafruit tutorial on connecting to a DHTxx (in this case, x=1) sensor, found **here**
Code integrated, added to the data string for the data logging shield, and verified
Item 2.1 complete!

Note: I definitely did not get through all of my sensors tonight. What I DID do was create this **guide** to how to integrate open source sample code for individual components into a sketch for one coherent project. While this did

slow me down big time tonight, it will hopefully speed up my process in the future... and maybe also remove some barriers for other people just starting out.

¯_(ツ)_/¯

October 30th
I am now working from the sketch file Integration_8 (2.2): Integrating the **Grove barometer**

found **Adafruit tutorial** on the barometer sensor
tested sensor using sample code
integrated code
learned that you don't have to define pins for I2C-connected components, which is neat
after troubleshooting with sen's help, barometer code verified (no loop needed, no variables defined - need to look more into this when I have more time)

Note: I'm only using the barometer for pressure, as altitude is difficult to measure in different

locations, and I'm already collecting temperature data from the temp and humidity sensor (2.3): integrating the **Grove digital light sensor**

chip on this sensor is the TSL2561, also connects over I2C
also using the **Adafruit documentation** for this one - so far, so much nicer than trying to navigate the Seeed wiki. I'm glad that exists, but leaves much to be desired.
ran the test code, and I'm just getting "sensor overload" all across the serial monitor
checked with sen, who suggested changing "FLOAT" to "LOW" in the line that reads
"Adafruit_TSL2561_Unified tsl = Adafruit_TSL2561_Unified(TSL2561_ADDR_FLOAT, 12345);"

from sen: "on the Adafruit board they connect the "address" pin of the sensor to an actual pin on the board so you can control it, it lets you change the address of the sensor, on the Grove board they for some reason connect it to ground and don't let you change it, it doesn't really make sense to me why they would connect it to ground, but they did so you have to tell the library that it's connected to ground, otherwise it talks to address A but the sensor is actually listening on address B, so they can't communicate"

without this feedback, I would have been looking for a different example code to use, so

I was grateful for the technical support!
Memo: I really need to learn how I2C works - I think that this is a huge weakness of mine right now

while integrating code, I included the configuration code in the setup, but it's noted in the Adafruit guide that the auto-gain is experimental, so if it ends up not working, I may need to switch to a static gain in the future
Okay. I'm deciding to remove the light sensor for now. The data is observable, if less precise, and the code is much more complex than I anticipated. I may return to this sensor if I have time before my visit on Wednesday, but I may not.

Removed light sensor code, other code verified no problem

Calling to do list item 2 done!
(3): create physical attachments for all sensors, including velcro and elastic for tail accelerometer

the first step of this is to finish the tail wagging sensor. at this point I don't have a cable that's long enough, and I don't have a soldering station at home. so I have to figure that out.
harness and bags have been located, power supply is ready to be charged, I've put together the SD cards and the coin cell batteries for the data logging shield

found random blue LED modules attached to digital pins 3 and 4, not sure why? removed. removing light sensor for now as well.
item 3 still has some sewing and cable-making in order to be finished, but that will be done tomorrow night at the maker space

(4) - done!
to do tomorrow: finish 3, plus 5, 6, 7, and then it's ready to go!

October 31
slight change of plans. I have decided not to include the tail sensor in the iteration of the package that I will use for data collection. The reasoning for this is twofold. One, there does not seem to be a way to attach the wire for this sensor that is non-invasive to the animal involved. Two, whether or not the dog's tail is wagging is observable data. While it may be possible to collect this data using a wireless accelerometer and an additional Arduino shield, this is beyond the scope of my current abilities and also would add to the bulk of the sensor package, which is already somewhat cumbersome for a small dog. Instead, I have opted to connect both accelerometers to the existing harness. One to the chest piece and one closer to the back of the harness. This way, I will collect as much data as possible, using the least invasive methods available to me.
sen explained some I2C things to me. A simple explanation can be found **here**
also, it turns out that integrating the light sensor wasn't as complicated as was originally thought. yay!
last items to finish are:

(3) create physical attachments for all sensors, including velcro and elastic for tail accelerometer (4) organize cables
(5) test the coin cell battery with the RTC

went back to **the Elecrow page on the RTC** and used the example code to set up and

integrate the RTC into the full integrated package (still on Integration_8, btw)
(6) make sure that the timestamp is being recorded with the data in a single file on the SD card while the package is running

In doing this, I also decided to organize my data string for the SD card a little better. The order that I'm writing the data is:

date and time
light level (in lux)
temperature and humidity

barometric pressure
analog accelerometer (positioned on the back) digital accelerometer (positioned on the chest) loudness

(7) test the whole package!

"voltage"
for some reason, in my serial monitor, between lines of data, I'm getting something that says "voltage", followed by three random numerical values. I couldn't at all figure out where these were coming from, so sen hypothesized maybe one of the accelerometers. Ze looked into the libraries of each, and sure enough, one of them has some superfluous code in there that means that it throws extra data. It's fine, and doesn't show up on the SD card.

light = 0 (oops)
my light value in the data string kept coming up zero. Turns out it was because I hadn't plugged in the physical sensor, at all. It was still in my bag. Oops.

life in the future: my pen will remember that for me
I was thinking to myself, in order not to turn the package on and off, I should just turn it on once when I arrive, and then leave it running, and keep notes of what time I start and end observations. And then I realized, I don't have to remember that, because we live in the future, and my **pen** will do that for me.

adding an indicator light for the SD card
after I tried testing and the SD card didn't initialize properly, which I only realized because I had the serial monitor open, I realized that I should have an indicator light for the SD card initialization. So that's added.

after I added the indicator light, the code was throwing random errors unrelated to anything that was just edited... sen suggested I make sure to double-check the sections I did edit to make sure there aren't any extra open or close brackets hanging around. There were. =P every light involved in this project happens to be blue, including the power indicator on the power source. So satisfying. Matchy matchy.

last but not least, the power source
For some reason, when I turn it on, using the power button, it just turns itself off a few seconds later. Tried plugging it into my cell phone and turning it on, and it didn't turn off randomly.
As I originally guessed, the Arduino package isn't drawing enough power to let the power supply know it's being used, which is why it's just turning off. I will need to pick up a new, more suitable power supply in the morning.

...but other than that, this project is pretty much done. There will be some modifications to be made for smaller dogs, but from here on out, my memos and documentation will continue in my research journal. Thanks to anyone following along at home. I'm nervouscited to mark this project complete... as complete as any project ever is in the wiki-verse anyway! The final version of the code for this project can be found on **my GitHub**. Special thanks to the **Sherman Centre**, and to sen, and to my very patient greyhounds, D and Boom, without whom this project definitely would not have been possible. <3