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Raptors and Humans: Exploring Alternative Therapies in Non-Clinical Environments using Birds of Prey

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Exploring Alternative Therapies in Non-Clinical Environments using Birds of Prey

by

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DEDICATION

I would like to dedicate this master's thesis to my parents, Gary and Maureen Hoyt, for their unwavering support and encouragement throughout my career as a graduate student. There's nothing quite like receiving a morale boost from the two people who know you best, and for that I am forever grateful.

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ABSTRACT

This study aims to deconstruct current conceptions about animal-assisted interventions by investigating relationships between human beings and birds of prey. Interactions between birds of prey, or "raptors," provide novel cases from which to reexamine failed attempts to provide empirical data in support of alternative therapies. Previous research addressing the efficacy of animal-assisted interventions is simply not robust enough to be considered a feasible treatment option by medical professionals. By extension, models of self-regulation in psychology are often presented using reductionist models and oversimplified therapeutic outcomes. Taken together, raptor-human relationships help to highlight the shortcomings of each, as well as potential solutions towards developing comprehensive frameworks for measuring efficacy of multispecies interactions.

This study was conducted at a small nature park in Largo, FL where a number of native raptor species are housed, cared for, and trained each day by volunteers. These volunteers made up the sample size for this study with forty participants (n = 40) between the ages of eighteen and seventy five. Drawing on both my own experiences as a raptor handler, as well as the qualitative data collected from volunteers, I employed a neuroanthropological approach to reveal underlying dynamics of the program via a two-stage research plan. Stage 1 of the study addresses the Raptor Program itself in facilitating human-animal interactions. Stage 2 addresses the mechanisms at play during firsthand encounters with birds of prey. Findings

suggest that programmatic and regulatory drivers within the program must operate together, often simultaneously, for an animal-assisted intervention organization to be successful. Further, this study calls for the ongoing development of novel methodological approaches in future research to determine the efficacy of animal-assisted interventions at large.

CHAPTER ONE:

INTRODUCTION

This project seeks to examine the relationship between humans and birds of prey by integrating cultural and biological elements into ethnographic research. More specifically, this study explores the ways in which interacting with raptors affects the quality of life of people who work with them using an interdisciplinary approach. To investigate the significance of raptors in the lives of their caretakers, fine-grained ethnographic methods were employed as part of a two-stage project (participant observation, semi-structured interviews, and focus groups) addressing programmatic and regulatory mechanisms within a non-profit organization dedicated to caring for injured birds of prey and educating the public about conservation. Drawing on research in psychology and animal-assisted interventions, this study aims to develop novel approaches towards assessing the efficacy of adjunctive therapy treatments (additional, non-pharmacological health therapies), as well as point to gaps in knowledge that currently exist in reductionist studies in cognitive science using neuroanthropology.

Background

My research is inspired by a recreational therapy program called Avian Veteran Alliance. Avian Veteran Alliance, or AVA, pairs inpatient veterans from Bay Pines VA Hospital with resident birds of prey from The Narrows Environmental Education Center to use as adjunctive therapy tools. Birds of prey, or "raptors", refers to several species of birds that hunt other,

smaller animals and are classified into five categories: hawks, eagles, owls, falcons, and vultures. The Narrows houses twenty two native raptors onsite including: a bald eagle, three great-horned owls, two barred owls, three red-shouldered hawks, two-red tailed hawks, two kestrel falcons, and ten screech owls. Currently, the program brings groups of up to twelve patients to the park twice a week and includes a brief orientation, introduction to the resident animals, and the opportunity to take a walk with a raptor around the thirty four acre property. The mission is simple: To serve as an outlet for veterans to come and relax outdoors. Due to an overwhelmingly positive response from the recreational therapists at Bay Pines, as well as participants in the program, AVA is in the process of being vetted through the mental health department at the Department of Veterans Affairs as a universal recreational therapy treatment.

However, AVA is just one part of a larger Raptor Program at The Narrows that is completely volunteer-staffed. BOP (Birds of Prey) volunteers are responsible for cleaning habitats, feeding, and training the resident animals, as well as assisting in educational outreach events conducted on and offsite. With the introduction of Avian Veteran Alliance to the park as a form of "ecotherapy", discussions began to emerge among volunteers acknowledging how working with raptors changed their lives. Ecotherapy describes an alternative type of holistic treatment that uses immersion in nature as a catalyst towards feeling calmer and more relaxed (Buzzell & Chalquist 2010). This approach to therapy is particularly useful to people diagnosed with severe anxiety and post-traumatic stress disorder. While the success of the AVA program inspired my research on raptor-human relationships, the study did not include inpatient veterans as the primary participants. Instead, I have chosen to ask volunteers at The Narrows to assist in this project in order to expand both the demographics and range of experiences of participants.

Positionality

Personal experiences as a BOP volunteer also played a major role in shaping the holistic approach taken to investigate raptor-human relationships outlined in the methods chapter of this thesis. For this reason, I must acknowledge how my positionality as both a researcher and volunteer with the Raptor Program impacted various stages of the research process.

I began working with raptors in 2013 at Boyd Hill Nature Preserve under the supervision of Patrick Bradley, the current director of the Raptor Program at The Narrows. Patrick and I co-founded Avian Veteran Alliance after some discussion about the ways in which handling raptors had made a profoundly positive influence in each of our lives. Patrick struggled with post-traumatic stress after returning home from the Vietnam War, wherein he was deemed "unfit" for transitioning back to civilian life. Averse to checking himself into a residential mental health facility (at a time when little was understood about PTSD), Patrick found himself in Saskatchewan, Canada where we would spend five years in the woods, alone, banding wild bald eagles to both assist in a larger research project, and also improve his mental health.

Although I am not a veteran, Patrick's experiences resonated with my struggle to overcome a diagnosis with PTSD years earlier. Having just moved to St. Pete from Tallahassee, I knew little about the area and was anxious to get involved in anything that provided a chance to "get back to nature" and, hopefully, address heightened levels of stress that had re-emerged after arriving to my new town. I began volunteering by cleaning cages and taking small Eastern screech owls out for a walk on the glove. Soon after, I began to think much more clearly and control previously unpredictable levels of anxiety – the birds were helping, in one way or

another, although I hadn't yet explored "why" this was the case. These experiences are what led to Patrick and I founding Avian Veteran Alliance

Shortly after AVA was formalized, we transitioned over to The Narrows to provide training assistance to volunteers and help expand the raptor programs capacity for outreach. Today, the Raptor Program is well-recognized within the community and has become completely self-sustaining due to drastic increases in fundraising activities and outreach events. As an active volunteer at The Narrows beginning in 2015, I have witnessed the breadth of changes that have taken place over the years leading up to the programs current success. Further, I have worked with raptors for five years and have extensive experience in husbandry, training, and conservation education. This knowledge base has provided key insights about how the Raptor Program helps to facilitate raptor-human relationships, as well as how the process of interacting with raptors actually works. I recognize that this level of involvement may call into question the objectivity of my research, however, I argue that the benefits of including firsthand knowledge as a basis for understanding far outweigh any potential limitations by giving me unique insights into this project.

Research Questions and Objectives

The primary objective of this project is to illustrate how both neuroscientific and anthropological inquiry can help advance ideas about raptor/human relationships. To do this, I will be investigating two research questions:

1. How does the Raptor Program at The Narrows facilitate (or not) the relationship between humans and raptors?

2. Can the process of how volunteers interact with raptors be modelled? If so, are the features that comprise the interaction comparable to those found in self-regulation models in psychology?

As discussed in the previous section, my positionality and experiences as a raptor handler were critical in determining the most useful questions to address in this study. Possessing a personal understanding of raptors improving mental health highlighted the significance of firsthand human-animal encounters seen in the second research question. However, I knew that an investigation of one-on-one interactions would not provide a comprehensive view of the reasons volunteers return to the park each week. As such, it was necessary to account for other aspects of the Raptor Program (such as education and outreach) that assist in maintaining a sense of novelty and sustainability that is necessary for continued success and expansion. This is what the first question aims to address, on a larger scale, so that the dynamics between micro and macro processes happening during raptor-human interactions could be deconstructed later on in the analysis. To clarify both aspects of research, the study was conducted in two stages: Stage 1 addresses programmatic details about the Raptor Program using participant observation, while Stage 2 addresses the process of interacting with a raptor by contextualizing human/animal behaviors through interviews and focus groups.

CHAPTER 2:

LITERATURE REVIEW

Introduction

The Raptor Program at The Narrows can be thought of as a mishmash of various moving parts and forces that act on each other to create meaning, knowledge, and individual experiences. A conglomerate of human and non-human actors, interactive spaces, social forces, and novel ways of relating – the Raptor Program is a dynamic system through which therapeutic outcomes have been achieved. For this reason, the study of raptor-human relationships facilitated by non-profit programming is deserving of anthropological inquiry, so as to fully unpack the various social, structural, and environmental mechanisms that contribute to the programs efficacy. Importantly, raptor-human relationships have never been studied within the context of an organization, nor have these interactions been incorporated into current research about adjunctive mental health therapies. For this reason, Chapter 2 aims to provide a comprehensive review of literature from anthropology, sociology, public health, and cognitive science that contribute valuable theoretical and/or methodological insights to Stage 1 and 2 of this study. The projects highlighted below are both directly and indirectly related to understanding raptor-human relationships as they a) explore topics closely related to raptor-human interventions b) allow for agency to be granted to non-human actors and c) use integrative approaches to model dynamic processes.

Although studies on raptor-based therapies do not currently exist (in the social sciences, cognitive sciences, or otherwise), there has been a steady increase in the available literature on canine and equine-assisted therapies. This is most likely a result of the recent surge in popularity of "companion animals" and "pet therapy" promoted by the media over the last decade or so, as well as increasing awareness about the negative outcomes produced by pharmacological drugs (Somervill et al 2008). Similarly, notions of how "ecotherapy" can benefit mental health has recently reemerged and become mainstream, attracting those who seek a holistic alternative to therapies conducted in clinical settings. While research in both arenas certainly appear to align much closer to studying raptor-human relationships than do the references proceeding it, these projects are fraught with methodological shortcomings that hinder conclusive results. For this reason, the following sections review significant theoretical frameworks employed in social science research such as actor-network theory, multispecies ethnography, and studies on the Anthropocene that can be applied to deconstruct interspecies relationships, as well as the program by which they are facilitated. Taken together, insights drawn from studies on animal-assisted and eco therapies, as well as ontological approaches to understanding social phenomena may be used in conjunction with studies in cognitive science via the innovative new field of Neuroanthropology. As Stage 2 of this study aims to model raptor-human relationships by merging ethnographic data with recent findings in neuroscience, the concluding sections review previous applications of neuroanthropological approaches to model dynamic systems, as well as models found in psychology (specifically self-regulation) that may be improved by the findings of this study.

Holistic Approaches to Mental Health Therapies

Ecotherapy

Ecotherapy broadly refers to the employment of nature-based practices to promote mental and physical health. This holistic approach aims to bridge the gap between human beings and their environment in a way that self-actualizes individual biology as part of a much larger ecosystem (Chalquist 2009). While frequently used in conversation with ecopsychology, the application of ecotherapeutic techniques requires both passive and active engagement with the outdoors, in some capacity (Kamitsis & Simmonds 2017). The latter includes activities that are typically associated with the term "ecotherapy", such as gardening, camping, running outdoors, or working with animals. Recent popularization of ecotherapeutic practice has introduced more formal terminologies, such as "horticulture therapy" (Simson & Straus 1997) and "animal-assisted interventions" (Beder 2012), to the forefront of cognitive psychology. As a response, numerous empirical studies have been conducted to determine the efficacy of ecotherapy as a valuable tool for clinical psychologists to incorporate into practice. "Green exercise", for example, describes physical activities that take place in areas with high "visible greenness", leading to improved focus and mood (Kim et al 2017). Additional studies suggest that "Horticultural therapy is effective in decreasing the levels of anxiety, depression and stress" (Kam & Siu 2010) and that outdoor education improves attentional capacity and self-esteem among children (Duvall 2011). Davis-Berman and Berman's Wilderness Therapy Program (Berman & Berman 1994), James T. Neill's meta-analysis of adventure therapy (Neill 2003), and Caddick's exploration of PTSD and surfing suggest that exposure to nature also helps to improve mental health (Caddick 2015). Despite overwhelming evidence in support of ecotherapeutic practices, these techniques remain underutilized by mental health professionals for reasons

outlined by Wolsko and Hoyt (Wolsko & Hoyt 2012). The author's suggest that this underemployment "may be due to a number of inherent professional and ethical complications, including concerns about breaching confidentiality, insurance coverage issues, monetary reimbursement, and a lack of access to suitable natural settings" (Kamitsis & Simmonds 2017). Further research is needed to fully unpack the barriers to ecotherapeutic care in order to understand how these techniques may be implemented in the mainstream.

Animal-Assisted Interventions

According to Pet Partners, the largest animal-assisted therapy organization in the U.S., animal-assisted interventions (AAI) are defined as "goal oriented and structured interventions that intentionally incorporate animals in health, education and human service for the purpose of therapeutic gains and improved health and wellness" (Pet Partners 2012). Further, animal-assisted interventions may be broken down further into three categories: 1. Animal-assisted Activities (AAA) such as hospital and school visits, 2. Animal-assisted therapy that more directly involve clients such as hippotherapy (equine physical therapy) and occupation therapy, and 3. Animal-assisted Education, primarily comprised of programs in which students read aloud to rescued dogs (Pet Partners 2012). Over the last few decades, there has been a surge in interest regarding the ways in which human-animal interactions may help facilitate improved health and well-being. As a result, the body of knowledge exploring the efficacy of animal-assisted interventions has become substantial within psychological literature. However, AAI studies continue to be treated skeptically by medical professionals and are therefore underutilized as a feasible form of treatment. Much of this skepticism derives from a lack of methodological rigor and heavy reliance on anecdotal information to draw conclusions, rather than empirical data. These studies also tend to be somewhat heterogenous by neglecting to account for animal

variability (breed, behavior, species), differential factors among human participants (demographics, medical history, etc.), and participants who did not experience health improvements as a result of AAI treatment. Finally, there are significant theoretical barriers to identifying scientifically sound reasons for incorporating AAI into clinical practice.

Many of the current ideological frameworks draw on two primary schools, those of attachment theory (Crawford et al 2006) and Kaplan's attention-restoration theory (Korpela et al 2001). Personally, I believe both approaches are equally valuable to fully unpacking the benefits of human-animal interactions, however, merging these approaches requires a more clearly defined research paradigm that has yet to be seen in the majority of AAI studies. That being said, many researchers have recognized this problematic gap in knowledge and have begun to incorporate quantitative data into AAI research as a response to these critiques. For example, at Phoenix Children's Hospital, changes in the mood of patients were recorded following a visit from a service dog from 2009 to 2014. The study confirmed a 93% to 96% positive therapeutic outcome in overall mood due to the presence of therapy animals (Nimer 2007). Similar Likert scale assessments were used to quantify the effects of animal assisted therapy on geriatric patients diagnosed with conditions such as depression, anxiety, dementia, and paranoid schizophrenia living in a residential facility. Results showed increased levels of social interactions among the participants and individual decreases in anxiety, insomnia, and fearfulness (Fine 2015). Still, though, while empirical approaches have certainly helped bolster the perceived efficacy of AAI, they neglect to acknowledge cultural, environmental, and behavioral flows that contribute to the formation of these dynamic, trans-species relationships. For these reason, Serpell et al suggests the employment of "biopsychosocial models" that promote "a more comprehensive conceptual model of the mechanisms underlying the effects if

AAIs on a range of biological, psychological, and social outcomes" (Serpell et al 2017). Further, acknowledging the transformation of how human beings relate (or don't) to their environment will assist in constructing biopsychosocial models that address contemporary health concerns.

Engagement with Non-Human Actors

As a necessary precursor for modelling various kinds of social systems, anthropologists must employ fine-grained ethnographic methods to fully unpack relational elements and sub processes that comprise (or not) larger frameworks. In other words, deconstructing the "network of actors" (Callon & Blackwell 2007; Munro 2009) in a way that reveals underlying, interactive forces can provide valuable insights about social phenomena. Drawing on constructivist approaches introduced in the 1980s by sociologists such as Bruno Latour, numerous scholars in the social sciences have expanded the breadth of "actor-network theory" (ANT) (Callon & Blackwell 2007; Latour 2005) to studies outside of laboratory settings today. ANT acts as an ontological toolkit, a way of seeing that lies outside the confines of strict theoretical frames and methodologies, by acknowledging the ways in which meaning is constructed through human and non-human agents in real time. This type of interdisciplinary approach had been particularly useful in studies related to health and wellbeing, as the efficacy of health programs existing on local, national, and global scales are often determined via reductionist models and systems of analyses. Anthropologist David Mosse uses this critique to convey the value of ethnographic research and agency (including that of the researcher) within development projects, and the fallacy that "…a singular knowledge system providing [a] coherent project analysis" (Mosse 2004: 34) is possible. By asking "not whether a program succeeds, but how 'success' is produced" (Mosse 2004: 8), Mosse argues that successful programs (context-specific) must be viewed as *consequential, innovative, replicable, technical,* and *causally-related to change*

(Mosse 2004: 36-37) to the complex actor-network from which the program is derived. Similarly, Fatimah and Arora employ ANT to investigate what they call the "hybrid collective" (Fatimah & Arora 2016: 28) of Energy Self Sufficient Villages (ESVs) in Indonesia, a project aimed at improving livelihood by way of new biofuel technology and efficient agricultural practices. By investigating the role of narratives within emergent "frictions" (Fatimah & Arora 2016: 29), the authors challenge traditional notions of agency, stating that "…even when agency appears to be centered on an individual (e.g. a farmer, a policy-maker or even a policy model), it is distributed between a range of human and nonhuman entities that together form hybrid collectives" (Fatimah & Arora 2016: 28). In the same spirit as feminist critiques by scholars like Anne Tsing and Donna Haraway, Fatimah and Arora argue that "nonhuman entities resist…and (re)shape development practices" (Fatimah & Arora 2016: 32) fluidly, irrespective of "Scientific facts, economists' calculations, policymakers' proposals, entrepreneurs' strategies or farmers' plans" (Fatimah & Arora 2016: 33).

Relative to how organizations may be constructed and/or promoted by actor networks within social institutions, Ginges and Atran offer compelling examples of how structured programs (specifically those with religious affiliations, as is the case of both studies) become legitimatized through charismatic individuals or styles of leadership (Ginges & Atran 2009). Early ideas about the role of charisma in understanding social phenomena comes out of Max Weber's research on rationalization and authority, describing charismatic leaders as "…holders of specific gifts of the body and spirit" that are "…believed to be supernatural, not accessible to everybody" (Weber 1968: 245). Moving beyond Weber's interpretation, Lewis argues that by acknowledging charisma as a type of non-human actor (i.e. something that may be appealed to in order to gain popularity or support), social scientists may better understand how groups or

programs become legitimized through alternate sources of authority. By exploring the process of how religious organizations seek to appeal to both tradition and science, Lewis points to the charismatic essence through which "'magnetic aura[s] of authority" are conveyed by "feelings of deference" for tradition, and a sense of "authority we associate with science" (Lewis 2010: 10). Although he doesn't use the term "charisma" per se, Scott Atran uses a similar approach to first understand how a turn to violent extremism "happens" among youth who join terrorist groups, and second, what may be done in response. He argues that "Sacred values must be fought with other sacred values, or by sundering the social networks in which those values are embedded," pointing to the significant role of charisma as a non-human actor within networks that perpetuate violence, but also within those striving for peaceful solutions via community engagement (Atran 2016).

The examples above reflect the broad applicability of actor network theory to social science research, as well as the importance of fine-grained ethnographic data collected on the ground. Taken together, this incorporation of actor-network theory points to "a disciplinary shift from attempts to deconstruct the historical systems of thought which underpin development to more detailed attention to specific practices and negotiations between different actors and between actors and knowledge formations." (Rossi 2004). Although originally intended to deconstruct systems of authority by scholars like Bruno Latour, the notion that non-human actors must be acknowledged as critical stakeholders has since been utilized among scholars aiming to improve practices in areas like development, global health, and community engagement. ANT challenges traditional theoretical frames due to "Its emphasis on intersubjectivity, on processes of knowledge production and reproduction, and on the epistemic nature of strategic action…" (Sansi 2013), thereby offering novel approaches to determine the "success" or "efficacy" of non-

clinical programs such as the Raptor Program at The Narrows. Relative to this study, intersubjectivity refers to key programmatic structures and features of raptor-human interactions that are highlighted via ethnographic field methods such as participant observation and semi-structured interviews.

Multispecies Ethnography

By studying the intertwined relationship of nature and culture, non-human actors inherently comprise much of what may currently be understood about people and their relationship with the environment. These non-human factors are what multispecies ethnography intends to address. Dr. Eben Kirksey, founder of the "Multispecies Salon", describes the ways in which plants, animals, fungi, and microbes appear in both cultural and environmental history, stressing the significance of these relations in current anthropological study (Kirksey 2014: 12). By incorporating ontology into his theoretical framework, Kirksey suggests that human beings are, in essence, multispecies beings and that these species may directly reflect what it means to be human. He states that "the goal in multi-species ethnography should not just be to give voice, agency, or subjectivity to the nonhuman – to recognize them as others, visible in their difference – but to force us to radically rethink these categories of analysis as they pertain to all beings" (Kirksey & Helmreich 2010: 562-563). This approach builds on Foucault's "biopolitics" in it's understanding that life is "something that happens *within* an environment where things – animate and inanimate- mingle" (Nading 2012:585). In other words, anthropologists must first "disentangle" the separation of people from their environment before investigating how human-animal relationships are formed.

Living in the Anthropocene

We live in an increasingly anthropogenic world, in which the divide between humans and non-human animals has never been greater. This recent geologic epoch has been described by many scholars as the "Anthropocene" – a time period defined by unprecedented human disturbance within or after the Holocene, depending on the research being referenced (Crutzen 2006; Steffan et al 2011; Zalasiewicz 2011). Although debates about whether to incorporate the Anthropocene into the Earth's history are ongoing, one thing remains clear: human beings have forever changed the landscape of the planet. These changes are often marked by damage to the environment such as deforestation and climate change, which, while important, do not point to the potential of living in the Anthropocene and subsequent ways to improve these conditions.

In her book "When Species Meet", Donna Haraway argues that many of the issues concerning the human-animal divide stem from a highly polarized discourse used to understand the relationship between species (Haraway 2008). Much like the historically (and often unproductive) rift between biological and cultural anthropologists, Haraway suggests that merging the hard sciences with advocacy efforts is necessary if we are to truly move away from anthropomorphic ideologies. Attempting to understand the process without an imposed direction or dichotomized explanation is a pertinent way to investigate a variety of cross cultural phenomena because they challenge traditional ideas about the mind and body. For example, although Haraway considers herself an avid ecofeminist, she states that "feminism outside the logic of sacrifice has to figure out how to honor the entangled labor of humans and animals together in science and in many other domains…" (Haraway 2008: 80). In other words, suspending anthropocentric beliefs, even temporarily, opens up new and innovative ways to study conventional "Us versus Them" positions among living things. Shifting to this type of

research paradigm in which animals are given the same considerations as active human participants may also resolve some of the aforementioned barriers to empirical AAI studies. Feminist critiques introduced by Haraway have also grown to include trans and queer theory, as *"*queer/trans experience offers possibilities of disruption" (Woelfle-Erskine & Cole 2015: 299) and "overturnings of social-cultural practice" (Woelfle-Erskine & Cole 2015: 299) necessary for improving a shared world. Employing this type of "ontological choreography" (Thompson 2002: 166) in the Anthropocene is a must to create meaningful change as part of the ongoing process of discovery.

Haraway's suggestion that the Anthropocene be viewed as more of a "boundary event" (Haraway 2015: 160) rather than an epoch marked by refuge destruction, as Anna Tsing argues (Tsing 2011), is helpful to see the way forward in AAI research. Theoretical frameworks that acknowledge both the role of living in the Anthropocene, as well as the ways co-species engagement happens between human and non-human actors is critical *"*to make the Anthropocene as short/thin as possible and to cultivate with each other in every way imaginable epochs to come that can replenish refuge" (Haraway 2015: 160). By exploring the reasons for this phenomena, this study may potentially introduce ways of relating that help "replenish refuge" in the Anthropocene.

Challenging Anthropocentrism

The intentional use of raptors as therapy tools has never been studied before. However, due to a widespread interest in the sport of falconry, numerous studies have explored the mutualistic relationship shared between raptors and man. Sarah Schroer suggests that "the study of falconry challenges an anthropocentric mode of anthropological inquiry as opens up the traditional focus of anthropology to also include nonhuman animals and to consider meaning

making, sociality, and knowledge production as co-constituted through the activities of humans and nonhuman animals" (Schroer 2014: iii). She uses the term "creaturely ways" to describe the mutualistic relationship birds of prey share with falconers and how the processes of meaning making focus on ontogeny rather than ontology. Foucault suggests that much of what makes us who we are can be understood through history, in what he calls "ontology of the present". In other words, "the past" is not simply something to look back on, it is "also the medium in which life today is conducted" (Jameson et al 2002). Yet, human beings have only recently begun to inquire about the ways animals impact the lives of their caretakers as equally important social actors. This temporary suspension of anthropocentric beliefs in order to build relationships with other, non-human species suggests an important shift in human prosocial behavior. More importantly, though, these ideas highlight how human variability and individual experiences shape "the process of becoming social" (Schroer 2014), or social ontogeny. This type of post-humanist discourse echoes the work of Donna Haraway and her study on "significant otherness" shared between canines and humans. Haraway dismisses the notion of "unconditional love" between owner and pet, instead focusing on the importance of co-education and simultaneous shaping of animal and human identities (Haraway 2003). This notion of a "shared world" between man and non-human animals is more relevant in today's society than ever before, one in which "overactive" toddlers are prescribed time spent outdoors and greater attention is paid to cellphones than actual conversation. As Berger suggests, "What distinguished men from animals was born of their relationship with them" (Berger 2009) and that the more human beings isolate themselves from the natural world, the more serious issues in mental health and wellness will inevitably become.

Neuroanthropology

Neuroanthropology is well suited to merge what is currently known about animal-assisted interventions in controlled settings, with what these therapeutic effects look like in non-clinical, uncontrolled environments. Building on Serpell's argument that biopsychosocial models are a necessary inclusion to the forefront of AAI studies (Serpell et al 2017), neuroanthropology allows for these models to be tested "in the wild" (Downey & Lende 2012). This is primarily done using participant observation, a staple field method of applied anthropology and other types of ethnographic work. Participant observation allows the researcher to record human behavior in the field as an adjunctive method to instruments such as surveys and interviews. In other words, participant observation assists in discerning what is stated by participants, from what is actually done. Lisa Barrett states that in order "For physical actions and body states to count as emotions (Y), some kind of physical change associated with meaning-making has to take place…one that includes representations of the body and/or actions…" (Barrett 2012). By applying what Barrett calls "The Physical Basis of Social Ontology", changes in physical states (both human and non-human) can be systematically recorded and analyzed to determine how underlying biocultural processes influence health. As Schroer suggests, human-raptor interactions require a modification of behavior on both sides, as well as a necessary physical distance between human and animal that must be maintained. This changed trans-species dynamic spans beyond ideas of embodiment found in anthropology and cognitive science. Embodiment describes the ways in which sociocultural features get under the skin by directly affecting how the brain functions. However, more work is needed to understand the process of how this happens, as well as the mechanisms employed to make such an impact on cognition. By using physical states or actions as representations of emotion (i.e. feelings of relaxation that may improve mental health), we

may better assess how these changes in behavior impact the brain and shape our understanding of the natural world. Explaining "social reality in physical terms" (Barrett 2012: 424) also allows social behaviors to be modeled, a method currently underutilized in anthropology but one that the growing field of neuroanthropology aims to address. As an example, Erin Finley uses neuroanthropology to model how Post-Traumatic Stress Disorder is experienced among combat veterans of Iraq and Afghanistan. Her neuroanthropological model captures the complexity of PTSD by accounting for how PTSD shapes culture, identity, and experience, and how the brain is physiologically altered in people who have been exposed to trauma. She argues that neuroanthropology introduces "a broader view of the interactions between multiple levels of human experience, thus providing a more holistic perspective on the many factors that influence the emergence of varying trauma responses" (Lende & Downey 2015: 282). Just as Finley aims to improve care for combat veterans by creating a holistic model of trauma, so too does this study seek to build on testable models of regulatory processes within raptor-human interactions.

Comparative Models

As a necessary point of departure for modelling lived experiences between humans and raptors, the model below was taken from Richard Bagozzi's "The Self-Regulation of Attitudes, Intentions, and Behavior", published in *Social Psychology Quarterly* in 1992. One of the primary contributions of neuroanthropology to broader literatures in psychology and cognitive science is the reworking and/or interpretation of traditional models to include ethnographic insights. Here, Bagozzi's model attempts to push past traditional theories of self-regulation by bridging the gap between intention and goal attainment by deconstructing the process of appraisal, emotions, motivation, and coping strategies (Bagozzi 2012). While this model is far more comprehensive than those used in reductionist theories of attitude and intention (attitude → desire → intention),

Bagozzi's approach remains somewhat linear for two reasons: 1) the model does not reflect the role of goal failure 2) it does not account for neural, behavioral, and/or social feedback mechanisms that may continuously re-shape these sub-processes. Despite these shortcomings, the model is a useful starting point for conceptualizing regulatory processes, as it affords room for qualitative findings and social mechanisms that impress upon a larger system of relating and producing knowledge. Further, the model leaves room for the inclusion of both human and non-human actors in regulatory networks that exist outside of clinical settings, as discussed further in Chapter 5.

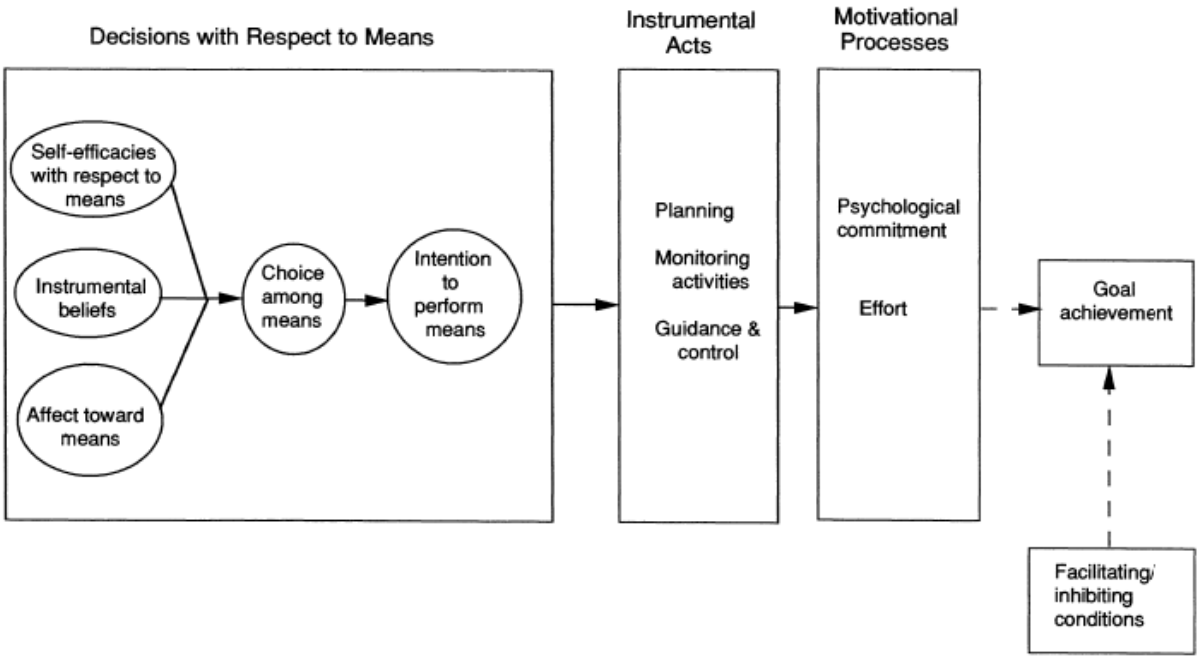

Figure 1. Model of self-regulation by Bagozzi (Bagozzi 2012)

Conclusion

The research projects reviewed above provide a comprehensive theoretical and methodological foundation from which to shape an overall approach towards investigating raptor-human relationships. Studies conducted on animal-assisted interventions and ecotherapy highlight the importance of employing integrative methods to determine the efficacy of alternative, non-pharmacological health treatments. Multidisciplinary frameworks such as actor-network theory and multispecies ethnography possess useful elements for analyzing data collected on humans and animals, while research on the Anthropocene assists in placing these projects within a particular time and space. As this study aims to identify how working with raptors improves mental health via ethnographic methods, the field of neuroanthropology is well-suited for merging the aforementioned findings with models in psychology. Further, neuroanthropology accommodates the need for increased levels of scientific rigor currently lacking in human-animal research by merging fine-grained ethnography with theory in the social sciences, as well as empirical data in cognitive and neuroscience.

CHAPTER 3:

METHODS

Introduction

As outlined in Chapter 1, this study employs a two-stage research plan to systematically address how raptor-human relationships are formed and sustained by the Raptor Program at The Narrows. Stage 1 addresses the program itself (Who runs it? How is it structured (or not)? What exactly does a 'raptor volunteer' do?), while Stage 2 take a closer look at the process of building a relationships with birds of prey. Evaluating the two aforementioned facets of raptor-human interactions as separate and distinct systems allowed for a more nuanced understanding of the system as a whole. This is because, when studied in isolation, each feature presents a unique set of questions that may otherwise be obscured by more pronounced aspects of the Raptor Program if evaluated in its entirety. Subsequently, Stage 1 and 2 ask different questions, thereby requiring different methodological approaches best-suited for the types of data being collected. Taken together, though, both stages work to identify significant actors (human and non-human) that facilitate interactions between humans and birds of prey as discussed in Chapter 6.

Given the broad scope of qualitative data needed to thoroughly deconstruct raptor-human interactions, the triangulation of ethnographic methods employed in the study was critical to the research process. These included the use of participant observation in Stage 1, and semi-structured interviews and focus groups in Stage 2 in order to discern between perceivable social

mechanisms and the ways in which these features became embodied by volunteers. A total of forty participants between the ages of eighteen to seventy five were observed (Stage 1) and interviewed at The Narrows (Stage 2), twenty-five of which elected to participate in optional focus groups (Stage 2). Participation in the study required that volunteers be considered either a) active volunteers with the Raptor Program (coming to the park once a week) or b) previously active volunteers who dedicated at least seventy five hours to the program within the last two years.

Data collection for Stage 1 began in February 2018 and lasted a total of three months. As previously discussed, Stage 1 required the use of participant observation to gain a comprehensive understanding of how the Raptor Program works. To do this, much of my time as a researcher during this stage was spent actively observing and recording at the park, as well as participating in daily volunteer activities. Being a volunteer with the Raptor Program myself, I had already established rapport with many of the study participants prior to conducting research. Contrary to the few hours a week required to volunteer, however, Stage 1 data collection required a considerable increase in time spent at The Narrows on a daily/weekly basis. Consistency was crucial in discerning both the general flows of engagement, as well as mechanisms that could potentially disrupt these flows that facilitate raptor-human interactions within the program.

Drawing on information recorded in Stage 1, I created a baseline model of raptor-human interactions using six human/non-human behaviors: Excitement/Nervousness, Attention, Modified Approach, Raptor Response, Reward, and Empowerment. I chose these behaviors based on their marked presence within Stage 1 field notes, as well as my personal knowledge of raptor-handling.

In Stage 2, interviews and focus groups were conducted to contextualize each of these behaviors, as well as provide any additional features I may have missed. Interview questions were specifically framed to validate (or not) the presence of each feature, as well as to explore what these behaviors meant to volunteers. Interviews were conducted in secluded outdoor shelters throughout the park, wherein volunteers were asked to share their thoughts and experiences about working with birds of prey. While the interview topics were designed to specifically address the process of building raptor-human relationships, focus groups assisted in understanding how raptors facilitate means of relating beyond the animals themselves.

Research Site

This project was conducted in various locations throughout The Narrows (formerly known as George C. McGough Nature Park), a 34 acre city park located in Largo, FL. The specific areas in which data was collected varied slightly between stages, with the majority of fieldwork taking place in outdoor settings (weather permitting). While a small percentage of data collected as a participant observer in Stage 1 took place inside the nature center (where the food prep kitchen and volunteer offices are located), most observations were made sitting amongst volunteers on what they refer to as the "raptor deck." The "raptor deck" is essentially just that – a large wooden deck that runs along the back of the nature center, situated between the building on one side, and raptor habitats on the other. The simple built-in seating and tall wooden railings give the outdoor space a comfortable, treehouse-esque quality that make it an appealing location to spend time while viewing the raptors on display. This is also where most volunteers choose to handle birds, and the research site from which my observations on raptor/human behaviors (the six features applied to the original model) were drawn.

Stage 2 interviews and focus groups were conducted in more secluded areas of the park, typically sitting at picnic tables underneath an available outdoor shelter. As one would expect to find in any city or state park, the shelters (also called pavilions) are very basic outdoor structures composed of a concrete slab, four large posts, and a galvanized steel roof. The City of Largo rents these spaces out for parties, get-togethers, etc., so the shelters are intentionally set back into the forest so as to provide paying guests with a sense of privacy. In the same way, shelters located "off the beaten path" provided a pleasant, quiet space to talk away from the hustle and bustle around the nature center. Especially on warmer days, the shelters were hugely beneficial to collecting data, as they offered a shaded space for volunteers to relax and take a break from outdoor work.

Sample

To be included in the study, participants had to be at least 18 years of age and be officially registered as a volunteer of The Narrows through the City of Largo Parks and Recreation Department. In addition, participants must have been active volunteers with the Raptor Program. For this project, an active participant is defined as a volunteer that either a) currently volunteers at least once a week or b) has dedicated 75 or more hours to the raptor program within the last 2 years. A total of 40 bird of prey (BOP) volunteers between the ages of 18 and 75 were interviewed, to include 22 men and 18 women. Focus groups held later on in the study consisted of 24 BOP volunteers total, with groups of six participating in one of four available focus group dates.

Stage 1 Research Design: The Raptor Program

Research Questions

1. How does the Raptor Program at The Narrows facilitate (or not) the relationship between humans and raptors?
2. How does the Raptor Program at The Narrows promote (or not) interactions among human beings and the environment?
3. Does the Raptor Program possess specific, observable features that contribute to the programs efficacy and/or sustainability?

Overview

The first stage of research primarily focuses on behavior, with greater emphasis placed on how raptor-human relationships are formed within the context of volunteering. To answer the primary research questions above, I acted as a participant observer to understand the nature of the program, what raptor/human interactions look like, and how volunteers engage with each other and the park. I observed and recorded the behaviors of participants at The Narrows for just over one hundred hours in order to gain an in-depth understanding of how the program facilitates the relationship between humans and raptors.

Rationale

Preliminary observations of veterans involved with Avian Veteran Alliance suggest that the intersection between structured volunteer opportunities and outdoor animal interactions is uniquely suited to improve overall well-being. As an example, AVA members who previously reported their inability to relate to civilians could be regularly observed engaging in conversations about raptors with non-veteran volunteers. In many cases, notable differences in behavior were observed from the time a veteran arrived at the park to the time they finished

working with a particular bird of prey. These include changes in body language (withdrawn/arms crossed to relaxed/open), social engagement (quiet/soft spoken to active discussion/interest), and proximity to peers (standing in clustered group to comfortable dispersal). Although inpatient veterans were not involved in this study, these observable changes in pro-social behavior suggested that raptor-human interactions may significantly impact social, as well as environmental, engagement. However, these changes were much more difficult to distinguish among volunteers (the participants for this study) as they have been a part of the community at The Narrows for a longer time period in comparison to AVA members. For this reason, Stage 1 aims to identify key features of the Raptor Program that make it both unique and sustainable. In other words, what is it that keeps volunteers coming back?

Participant Observation

Taking both an applied and interpretive approach to research, I began the study by actively participating in all aspects of the Raptor Program. Over a two-month period, I spent over one hundred hours taking part in both the day-to-day operations of caring for birds, as well as participating in numerous educational outreach events. Generally, volunteer responsibilities fall into one of these two categories (husbandry and outreach); while some volunteers choose to partake in one or the other, the majority elect to participate in both facets depending on personal interest and availability. For this reason, ethnographic data was collected at The Narrows, often sitting amongst volunteers engaged in casual conversation with park guests, as well as various community outreach events.

The daily husbandry tasks required to properly care for raptors includes: cleaning habitats (cages), preparing diets, and handling birds (taking them for a "walk"). New volunteers are required to spend a minimum of three days cleaning habitats prior to handling birds. The reason

for this protocol is twofold: a) cleaning habitats daily ensures the animals are living in sanitary conditions b) the process of moving around a habitat to clean allows volunteers to become familiar with the birds, and in turn, for the birds to become accustomed to the presence of a new human being. These initial "hands-off" encounters assist in preparing volunteers for working with raptors later on, as the program requires each bird to be handled daily for a minimum of one hour. In this case, "handling" simply means sitting or walking with a bird on the glove. Volunteers must also prepare a rotating diet of rats, mice, day-old chicks, beef heart, and chicken for the birds each day. This task is not only crucial to the livelihood of the animals, but also helps some of the more squeamish volunteers become accustomed to manipulating frozen and thawed prey animals to use as training incentives for the resident raptors.

As a sublet of the Friends of Largo Nature Parks non-profit organization, the Raptor Program relies on donations from the community to cover expenses like raptor food, improving habitats, and general supplies (gloves, leashes, food trays, etc.). The vast majority of these donations are raised through educational programs conducted by BOP volunteers either at the park, or another offsite location. Educational raptor programs may be formal (lecture-style) or informal (community tabling events), but always include an up-close encounter with the park's "avian ambassadors" to help teach the public about native raptors species. Over the course of the study, I joined volunteers in numerous outreach events to explore the role of education in the lives of volunteers and the Raptor Program at large. This meant meeting up with volunteers early in the morning to gather supplies and put birds into their designated travel boxes, before packing into a City of Largo mini-van (birds and all) and traveling to our destination. Some of the programs I observed included formal lectures presented at assisted-living facilities, schools, and conservation groups, as well as larger community events such as St. Pete Seafood Festival,

Repticon, the largest annual reptile convention in the county, and Raptorfest, an annual raptor-oriented festival held at Boyd Hill Nature Preserve in St. Petersburg, FL.

Drawing on ethnographic data collected in Stage 1 using participant observation, Stage 2 addresses the process of individual raptor-human interactions using comparative models in psychology.

Stage 2 Research Design: Regulatory Mechanisms

Research Questions

1. What does the process of interacting with a raptor look like?
2. Can this process be modeled? If so, does this process share particular features with models in psychology?

Overview

The second stage of research aims to deconstruct the process of raptor-human interactions in a natural, outdoor setting. Further, this second stage seeks to determine whether raptor-human behaviors that were consistently observed and deemed significant in Stage 1 is to identify The second goal is to determine whether or not this process can be accurately modeled and repeated to later compare with studies in neuroscience. I also made sure to note any gender differences in interactions during this stage to be analyzed later on in the research process.

Rationale

As a volunteer with the Raptor Program, I have spent a lot of time over the years watching and discussing how raptors and humans interact with one another. Although these observations were made outside the context of anthropological research, they provided important insights about the mental and physical processes volunteers must go through to ensure a positive interaction with a bird of prey. A combination of personal experience and preliminary behavioral

observations suggested that some sort of regulatory process was happening during raptor-human interactions. To identify the features of this process, semi-structured interviews were crucial in specifically addressing one-on-one interactions, and were further bolstered by focus group discussions conducted later on in the research process.

Modelling

Data collected in Stage 1 as a participant observer provided a platform from which to identify key features of raptor-human interactions. By consistently watching and recording the process of raptor handling between numerous volunteers and birds (starting from the time volunteers brought an animal out of a habitat to the time the animal was put back), I was able to identify specific recurring behaviors exhibited by both parties. These behaviors included: Excitement/Nervousness, Attention, Modified Approach, Raptor Response, Reward, and Empowerment. These perceivable features were used as a starting point towards creating a more comprehensive model of raptor-human interactions in Stage 2 by accounting for the lived experiences of volunteers through interview and focus groups. Further, the resulting holistic model composed of six observable raptor/human actions (with variants added to Stage 1 data) and their significance (Stage 2) was compared to Bagozzi's model of self-regulation discussed in Chapter 2.

Methods: Semi-structured Interviews

A total of 40 audio-recorded interviews were conducted for this study. Interviews took place in a discreet location within the park to ensure the privacy of participants and lasted between 45 minutes to one hour. The interview questions aimed to address the six features outlined above in a way that did not lead participants or state each feature directly. For this reason, participants were asked about specific experiences they have had with raptors (Example:

How did you feel in those initial moments of having a bird of prey sitting on your glove?) and whether they could recall other sensory information (Example: Was there anything else going on in the environment?). All interviews were recorded, transcribed, and stored by the PI.

Focus Groups

A total of 4 focus group discussions were held with six volunteers per session (24 focus group participants in all). Participants that expressed an interest in contributing to focus group discussions were contacted and scheduled for one of the four available dates. Focus group sessions lasted approximately two hours (breaks included) and were held in the Nature Center classroom. These discussions were audio-recorded and aimed to address various facets of the Raptor Program that make volunteering a worthwhile experience. Additionally, focus group questions sought to explore the sense of volunteer community by discussing external impressions of the Raptor Program. The questions asked in the focus group are as follows:

1. *Could you all describe to me what handling a bird of prey is like?*
2. *How do you explain your volunteer position to someone who knows very little about raptors or the program? (Depending on answers) Have you experienced any difficulties in relaying why raptors are so interesting to work with? What don't other people get about handling these birds?*
3. *Do you think that the guests genuinely care about the birds? Are they receptive to the information you provide them? How do you decide whether to talk to a guest or choose a guest to talk with?*
4. *Would you recommend volunteering at The Narrows to someone that was scared of birds? Why?*

5. Hypothetical situation: *Due to budget cuts, The Narrows will be forced to close its doors and rehome all resident animals within three months. Can you describe what might happen upon hearing the news? What about in the months that followed?*

Data Analysis:

Once all data was collected as a participant observer, I used a general thematic analysis to identify important aspects of the Raptor Program and it's facilitation of co-species interactions recorded in Stage 1. By employing James Spradley's method of identifying/analyzing domains to evaluate specific categories of meaning, I was able to establish universal themes that emerged from the data set.

Per "The Ethnographic Interview," Spradley's approach to domain analysis "…begins by using semantic relationships rather than cover terms to discover domains" (Spradley 2016: 108), followed by the use of "…structural questions to confirm or disconfirm hypothesized domains" (Spradley 2016: 107). Using the nine universal semantic relationships proposed by Spradley (Appendix), numerous domains were identified that helped to highlight particular elements of volunteering at The Narrows that make the experience both novel and successful. For example, the semantic relationship that Spradley calls "Rationale", understood in terms of "X is a reason for doing Y," (Spradley 2016: 111) was used to confirm that, for many participants, Educational outreach *is a reason for doing* volunteer work with the Raptor Program.

A similar approach was used to identify and analyze prevalent features of raptor-human interactions in Stage 2 by deconstructing semantic relationships between behaviors and their meaning/personal significance. Further, data collected in Stage 2 expanded the breadth of the original model to include variants of each feature. Acknowledging the variability in predicted outcomes via an exemplary "either/or" approach was a simple way to model patterns of

regulation that expand beyond linear views of the same processes in psychology. In this way, Bagozzi's model served as a helpful point of departure for illustrating why ethnographic data could and should be used to more thoroughly address biocultural processes as part of an overall neuroanthropological approach. This is accomplished via embedding both qualitative and quantitative data collection into the larger research methodology at the outset of a project. Contextualizing cognitive science models in this way not only broadens the scope of findings, it helps to highlight crucial discrepancies that may jeopardize the validity of study results later on.

As described by founders Dr. Daniel Lende and Dr. Greg Downey, the field of neuroanthropology offers a novel, mixed-methods approach towards "identifying neurocultural processes" (Downey & Lende 2012: 396) that may be analyzed through a variety of interpretive frameworks. Importantly, this type of analysis makes clear how "culture" is defined and used to interpret results, so as to more thoroughly integrate ethnography and neuroscience into processual models. For example, Downey's neuroanthropological study of capoeira, a popular Brazilian martial art, systematically views "culture" "...not as information, but rather as skill acquisition…" (Lende & Downey 2012: 41), as "Skill acquisition focuses on the process of enculturation…" (Lende & Downey 2012: 41). In this way, Downey's analysis uses the process of learning the sport itself as a vector through which culture is expressed, often by deconstructing how "embodiment" and what he calls "enskillment" happen (Lende & Downey 2012: 41). Similarly, Katja Pettinen employs ethnographic analysis to address cross-cultural variation in how somatic skills are acquired, specifically between western models of learning and those demonstrated in taijutsu, a Japanese martial art. Her study highlights how preconceived notions of learning, along with their emergent properties such as "muscle memory" (Lende & Downey 2012: 209), detract attention from underlying sensations that do not fit neatly into current models

of somatic skill. Per Downey's analysis of enculturation through processes embodied by "capoeiristas" (Lende & Downey 2012: 40), so too does Pettinen evaluate neurocultural systems through the "kinesthetic context" (Lende & Downey 2012: 210) of taijutsu. By first recognizing how "…somatic skill foregrounds repetition, and hence performance itself, as a key dimension of teaching and learning" in the west (Lende & Downey 2012: 209), Pettinen sets the stage for her critical analysis of "skills" as "more broadly distributed patterns of sensation" (Lende & Downey 2012: 210), through which western models may be improved.

Drawing on previous work conducted by neuroanthropologists like Downey and Pettinen, this study seeks to address the neurocultural processes of raptor-human interactions in both material and theoretical terms. Bagozzi's model presented in Chapter 2 serves as a useful point of departure for ethnographic analysis in its representation of self-regulatory mechanisms as unilateral contributors to eventual goal attainment (Bagozzi 1992). By analyzing patterns of raptor/human behavior (Stage 1) in similar terms and attempting to situate them within models found in psychology (such as Bagozzi's in Stage 2), the need for further investigation of assumptions about self-regulation became apparent via discrepancies that emerged. This inability to represent regulatory processes using isolated features resonates with Pettinen's findings that "predetermined movement patterns or any isolate 'motor skills' have very little capacity to explain the nature of somatic skill in such complex open-ended interaction" (Lende & Downey 2012: 210). For this reason, variants of each feature were added to the original model in Stage 2 so as to illustrate the context of self-regulation as dynamic rather than predictive. Further, the updated model provided critical insights about the problematic associations made between self-regulation and goal-attainment by exploring the role of negative feedback in raptor-human

interactions, and, more interestingly, how this affected volunteer perceptions of their relationships with birds of prey.

My experiences as a seasoned volunteer with the Raptor Program prior to conducting this study played an integral role in shaping the overall approach to research, both in terms of the methods used for data collection, and the interpretation of results later on. Further, the project provided a unique opportunity to engage with my own reality as a raptor handler, through which valuable insights were gleaned and applied to enhance current understandings of regulatory processes.

I would be remiss in simply glossing over the significance of my positionality as a researcher and informant, particularly given the critical role that firsthand knowledge played in deconstructing the nuances of how raptor-human relationships are formed. For example, over the course of my five years of handling birds of prey, I have learned how to recognize and respond to changes in a birds' behavior that, even for intermediate handlers, are difficult to detect (though not 100% accurate, I have scars to prove it). This type of in-depth understanding helped to develop and improve the Stage 2 model through careful observation of behavioral changes ranging from intermittent feather raises, to a compulsive refocusing on particular environmental stimuli. Relative to how the Raptor Program facilitates interspecies interactions (Stage 1), I have personally witnessed and been involved in its development since 2013, just after the park had faced possible closure due to lack of funding; today, the Raptor Program is responsible for funding most non-profit activities. Firsthand longitudinal knowledge helps to situate data collected as a participant observer within time and space, further contextualizing dynamic aspects of the program that contribute to its success.

As previously discussed, much of what has inspired this project comes out of my personal experiences of working with raptors to cope with post-traumatic stress, as well as statements made by members of Avian Veteran Alliance reporting improvements in overall mental health. Taken together, this personal connection to research and investment in a deeper understanding of adjunctive therapies frames my positionality in what social anthropologist David Mosse calls "First person perspectives through ethical work on the self" (Mosse 2017). In an online video titled "Suicide Prevention and Lived Experience," Mosse addresses the ways in which firsthand experiences "produce engagement" through "an existential imperative to turn givenness into choice" (Mosse 2017). Drawing on his own experiences of working in suicide prevention after the tragic loss of his young son to suicide, Mosse highlights how personal engagement with research offers "A kind of quiet liberation, preparing for new ways of being in the world and making a difference in the lives of others" (Mosse 2017). Though the study does not address post-traumatic stress directly, it is through this dimension of engagement with raptors that "retracing and overwriting pathways to tragedy" became possible.

Ethical Considerations and Consent

The primary ethical consideration for this study was to maintain the confidentiality of participants. Pseudonyms were used in place of a participant's legal name, unless they explicitly stated otherwise in writing to ensure confidentiality. The PI did not disclose or discuss personal information provided by participants with anyone other than designated research personnel using these pseudonyms. All research took place in a discreet location within The Narrows so that other volunteers and/or visiting guests were not able to listen to answers provided by participants. Focus groups were held in a private classroom that is not accessible to anyone other than participants and the PI. Information that was audio-recorded during interviews and focus

groups was be uploaded and transcribed to a password protected computer that only the PI can access. All data used an alphanumeric code that is unaffiliated with letters of consent to ensure the privacy of participants. Physical and electronic records will be deleted and/or destroyed within 5 years. Further, I emphasized the voluntary nature of this project to participants by reminding them that they may end their participation at any time throughout the interview process.

All participants were required to sign a letter of consent. The informed consent process involved a thorough review and explanation of the letter to each participant by the PI. Participants also had to successfully demonstrate their knowledge of informed consent to the PI prior to signing. Once the letter of consent had been signed and returned, the PI scheduled an interview time. At the start of the interview, participants were reminded of the voluntary nature of their participation and that they could choose to end the interview process at any time. 40 interviews were audio-recorded and included questions about the participant's experiences as a BOP volunteer at The Narrows. Once the interview had concluded, the PI asked the participant if they would like to discuss their experiences further in a focus group, but that participation is not required to be a part of the study. After all interview data had been collected, the PI organized focus groups of willing participants to generate discussion about the nature of human/raptor relationships and their experiences volunteering with birds of prey at The Narrows.

CHAPTER 4:

STAGE 1 RESULTS

Introduction

The objective for Stage 1 of this study was to determine how the Raptor Program at The Narrows facilitates raptor-human relationships. In order to identify specific aspects of the program that help guide this process, I regularly engaged in daily volunteer activities, recorded human/animal behaviors, and watched various educational presentations led by raptor handlers. My experiences as a BOP volunteer aided this process; by possessing firsthand knowledge about each of the aforementioned dimensions of the program, I was better able to discern how these facets relate to one another. In other words, learning the various raptor-related terminologies, practices, and reasoning behind why volunteers "do what they do" takes time and, in my view, could potentially detract from the overarching goal of evaluating the dynamics of the program over a brief span of two months. Using this knowledge, the majority of my time as a participant observer was spent in a few select areas of the park for two or more hours (rather than numerous locations for less time) that, based on my experiences, I believed to be significant social spaces. Analyzing emergent themes from the ethnographic data recorded in Stage 1 provided an opportunity to strategically organize information and interpret social networks using insights from research observations, as well as personal experience. The features of the Raptor Program that I identified as being significant factors in facilitating raptor-human relationships included: charismatic leadership, non-profit autonomy, setting/space, education and outreach, and

volunteer community. Per the review in Chapter 2, Stage 1 results suggest that these features work in conjunction with one another as non-human agents (Mosse 2004), forming a type of "hybrid collective" (Fatimah & Arora 2016: 28) that resists traditional methodologies for interpreting dynamic systems. The role of charismatic leadership, for example, became evident in my frequent observations of Patrick, the Raptor Program director, regularly engaging with volunteers, staff, and park guests. Just as Lewis considers charismatic leaders who invoke "feelings of deference" (Lewis 2010: 10) a critical facet of legitimizing programs, so too did I account for Patrick's "magnetic aura of authority" (Lewis 2010: 10) as a significant feature for facilitating interspecies interactions in Stage 1. By extension, the Raptor Program's *non-profit autonomy* allows Patrick to manage the more technical side of things within the actor network by ensuring that funds raised through the efforts of volunteers are viewed as "consequential" (Mosse 2004: 36) and "causally-related to change" (Mosse 2004: 36) via new habitats, equipment, and marketing. Other significant facets include the outdoor *setting/space* where volunteers could regularly be seen handling raptors, talking, and conducting *education and outreach* programs. Based on my observations in Stage 1, there was a noticeable difference in how relaxed and/or open to socializing both volunteers and park guests were upon sitting outside in a natural environment. The natural setting of areas like the "raptor deck" in the park appeared to be well suited for conducting educational programs, perhaps by reshaping the ways in which typical teaching and learning "happens" as suggested by Fatimah and Arora. Pet Atran's analysis of how to initiate peaceful solutions through shared values (Atran 2016), having both a common interest in raptors and willingness to dedicate unpaid time to them at The Narrows pointed to the role of *volunteer community* as a significant force within the program. I suggest that considering each human/non-human feature listed above as key actors within a more complex actor network

allows room to determine "how 'success' is produced," rather than "if" a program will succeed (Mosse 2004: 8).

The Raptor Program

The Narrows houses a variety of native raptors species to be viewed by park guests and used in numerous on and off-site educational programs. Often referred to as "avian ambassadors", the birds serve as educational tools to help teach the public about why conserving birds of prey in Florida is so important. All of the resident animals have been deemed "non-releasable" by the state because of permanent injuries that cannot be surgically corrected (often damage to the eyes or wings), or their status as an "imprint". Imprinted birds are birds that lack the natural instincts to flee from larger predators and hunt by themselves due to consistent exposure to humans within the first twelve days of life. This primarily happens when someone picks up a baby bird that has fallen from its nest (the time its mother would begin 'teaching' her young) and takes it into their home for an extended period of time before contacting a wildlife rehabilitation center. Although The Narrows does not rehabilitate injured raptors, the Raptor Program works in conjunction with local rehabbers, taking in birds (dependent upon space availability) that have been deemed non-releasable and feasible for education.

The term "raptor" is used to describe five groups of predatory bird species: hawks, eagles, owls, falcons, and vultures. Currently, volunteers with the Raptor Program are responsible for the care of twenty two birds, including: ten eastern screech owls, two barred owls, three great-horned owls, three red-shouldered hawks, two red tail hawks, a black vulture, a turkey vulture, and a southern bald eagle. As educational animals, each bird must be handled daily by volunteers to maintain training and familiarity with humans. Additionally, raptor habitats are cleaned once a day and fed six days out of the week. Feeding birds of prey on glove

is essential to establish trust between the animal and handler, as raptors rely heavily on eyesight to monitor their environments, and are therefore extremely vulnerable to predators when looking down to eat. Volunteers typically dedicate between one to three days a week to the Raptor Program for a few hours each visit.

Program Management and Coordination

Charismatic Leadership

Patrick Bradley has directed the Raptor Program at The Narrows since the spring of 2014. Patrick, aka "Pat", is responsible for the oversight of all birds and volunteers, as well as expanding the programs outreach, media coverage, and funding. Due to his forty plus years of experience as a falconer, Pat has extensive knowledge about raptor training, husbandry, and care, making him an invaluable asset to the program. Additionally, he was worked with a number of different animal species as a conservation educator throughout his lifetime, including Kodiak bears, cougars, wolves, venomous snakes, alligators, and giraffes, just to name a few. Patrick also manages the Avian Veteran Alliance program which, being a Vietnam era veteran himself, he is extremely involved in promoting. As the Raptor Program director and retiree, Pat volunteers his time at The Narrows seven days a week to ensure the day's events run smoothly. For this reason, I consistently observed and recorded interactions between Pat and other people at the park (volunteers, guests, and staff) that point to his role as a charismatic leader.

Throughout my time at the park, I could typically find Pat sitting on the outside deck – cigarette in one hand, coffee in the other. He's an older gentleman with an off-white mustache and portly stature, and can almost always be seen wearing a colored fishing shirt, knaki cargo shorts, and a shark tooth necklace. Aside from the large, portrait-style tattoos on each calf (a black bear on one leg, cougar on the other), both his appearance and persona are akin to the

many “animal experts” featured on channels like Animal Planet or National Geographic. Having spent years as an educator, Pat is well-versed in engaging a wide range of audiences to promote conservation. Further, his outgoing personality and passion for expanding the Raptor Program in exciting new ways serves as a motivational force for BOP volunteers, as well as new recruits.

Over the course of the project, Pat’s role as a charismatic leader became evident in observing the ways he interacted with volunteers, guests, and staff at The Narrows. As one example, a young woman visiting the park expressed her interest in raptors to a volunteer on the outside deck, stating that “she had always wanted to work with birds of prey” and that the volunteers “were so lucky to have such an extraordinary job.” Overhearing the conversation, Pat walked inside the nature center and returned minutes later with a screech owl in his left hand and paperwork in the other. He approached her, and as she turned around in awe of the “tiny owl”, he said “You said you wanted to work with birds, huh? Well, here’s your chance.” She has now been a volunteer with the Raptor Program for two months and is a participant in this study.

Non-profit Autonomy

Although the Raptor Program is based out of a park owned and maintained by the City of Largo, the program itself is funded via a non-profit 501(c)3 called the Friends of Largo Nature Parks, Inc. The non-profit serves as a primary funding stream for the Raptor Program by collecting tax-deductible donations from the public and applying for larger 501(c)3 grants. Further, donations may be written out specifically for the Raptor Program to be used for food, supplies, and other expenses required to maintain the program. As previously mentioned, all fundraising efforts such as community outreach events and educational programs are volunteer staffed, meaning that volunteers are solely responsible for generating income not received in grant donations. Subsequently, this monetary incentive bolsters personal initiatives among

volunteers to participate in community outreach and other donation-based programming. Per a comment made by one of the younger participants in the study, "Going to programs makes me feel like I'm really making a difference. I mean, yeah, I enjoy the educational aspect of the program, but at the end of the day these birds need to be fed, and the only way to make that happen is to get out there and convince people to donate to our cause. It's for the birds!" Her response points to the value of specifying where exactly donations are going to be used. For volunteers, fundraising provides an opportunity to see their efforts materialize via donations made to the program collected at the end of an event. For the public, this specificity provides peace of mind that their donation will be used for its intended purpose, the Raptor Program, rather than expenses un-related to caring for birds of prey.

Mechanisms of Volunteer Engagement and Program Operations

Setting/Space

The Narrows is a small 34 acre city-owned park located in Largo, FL that is free to the public and is home to a variety of resident animals. Formerly known as George C. McGough Nature Park, or "Turtle Park" to locals, The Narrows is nestled along the intercoastal waterway where guests can enjoy viewing a wide array of local waterfowl, marine mammals, and other native flora and fauna. The park is comprised of numerous walking trails and outdoor shelters, as well as an Environmental Education Center that houses reptiles, fish, and birds of prey.

The data collected as a participant observer points to the significance of how setting and space work to facilitate raptor-human interactions. Areas of primary interest at The Narrows include the outdoor patio adjacent to the nature center, and the pavilions located in various places throughout the park. Further, the park as a whole provides a natural setting for volunteers to take birds "for a walk" and relax outdoors.

Upon arriving at The Narrows, guests and volunteers are led to the front doors of the nature center, where they are met by a front desk associate and resident screech owl sitting atop the counter. Staff and volunteer offices are located just behind the front desk, making this area of the center a productive space for paid and un-paid employees to conduct meetings, coordinate schedules, and designate tasks for the day. Towards the back of the nature center is a door leading out to a large deck with built-in seating, along which guests and volunteers can view the resident birds of prey in wooden aviaries or "mews". The deck acts as a "hub" of sorts for guest and volunteers, as the railings allow those handling raptors to relax their gloved arm (a three pound bird starts to feel like fifty pounds after a while) while educating the public about the animals. BOP volunteers also use this area to talk amongst themselves, hang out, and feed the birds.

As the Raptor Program requires all birds to be handled and walked each day, many of the volunteers elect to wander the park with a bird for thirty minutes to an hour, either by themselves or with another volunteer. The walks provide an opportunity for raptor handlers to spend some time outdoors, and for the animals to experience a change in scenery. Shaded pavilions dispersed throughout the park offer a quite space to take a break, relax, and cool off from the Florida heat. These shelters also serve as a temporary "get away" from other social spaces within The Narrows (ex. The raptor deck, volunteer office), and help facilitate in-depth conversations between volunteers who choose to walk the park together. As one participant stated, "Picking a bird up and going for a walk just helps me think. Being out in nature is probably a big part of it...Here, I can just, you know, grab a bird and wander around, and then if I get tired, I just sit in the shade with her and listen to the leaves blowin, the birds chirping…total zen." Walking with another participant, she expressed to me her experiences with social anxiety, and that the

pavilions provide a safe place for her to calm down with a bird after "too much human face time" (referring to other volunteers).

Taking a break from walking with the same volunteer, we stopped at a nearby picnic table and sat for a while, agreeing to give each other a few moments without conversation to just appreciate the weather. I needed the break, too, but couldn't help noticing subtle changes in the demeanor of both she and red-railed hawk Dakota perched on her glove. In the fifteen minutes or so spent in comfortable silence, I watched as Dakota shook out her feathers and began preening, signaling that she too was comfortable. In what appeared to be a moment of affirmation that her handler was doing a good job, the volunteer's gaze shifted from hawk to a small snake peering out of the grass a few feet away, then up to the trees where a woodpecker was furiously hammering away at a decaying oak tree limb. It wasn't until Dakota spotted a nearby squirrel that she became highly alert, flattening the feathers on her head and bobbing up and down to gauge the distance of what I imagined she thought would be her next meal (despite her being tethered to the glove). Only then did the volunteer shift her attention back to the hawk sitting on her glove and, noticing Dakota's change in body language, quietly asked her "What did you see? Did you see something girl?" I knew she had, but watched as both volunteer and hawk engaged in a shared observation of the squirrels (at this point there were many) running around a palm tree at lightning speed in a game of springtime squirrel "tag." Seeing as both of us were surrounded by red-tailed hawk territory, handling Dakota in *her* native habitat without the distraction of conversation (as most volunteer's do when walking the park) highlighted the changed dynamic between raptor and human. In those moments of silent observation, I watched as the teacher became the student, paying special attention to the behavioral cues exhibited by a bird that was far more aware of the surrounding area than either of us could hope to be.

Wherever Dakota looked, we looked, directing our attention to surrounding wildlife that our limited human senses would never have made us aware of, such as the family of raccoons foraging ten or so feet away from our table. Our long-winded silence was broken after sharing a muffled laugh together, watching the inexperienced kits in their clumsy attempts to climb a nearby pine tree (courtesy of Dakota's impeccable eyesight that directed us to the scene). Regaining our composure, the volunteer expressed the ways in which being immersed outdoors with a bird makes the interaction "work" in her explaining that "being out in nature with a bird isn't just you and the bird; it's you, the bird, and all of the other animals out here just doing their thing. Sure it makes me feel good that I can bring Dakota out into the place she used to call home, even though I know it's not even close to the same thing, but it's also fun for me to learn from her – like, you watched it! We would have NEVER seen those adorable little raccoons if she hadn't been all (bobbing her head up and down) like this! And, not gonna lie, I'm pretty weird about being in nature all by myself, but having her with me makes me feel safe if that makes sense. Like, this probably sounds weird, but it's like having someone with you who knows an area you've never been to before and can show you around. Plus, who's gonna run up on a chick holding a big ass hawk on their glove?? NO ONE, ha."

This particular interaction highlighted the significance of outdoor settings in facilitating raptor-human interactions by illustrating the process and/or benefits of being in nature as described previously by volunteers. Based on the aforementioned observations, handling raptors in natural settings provides an opportunity to temporarily "return" the animals to their home, an environment through which raptors can more clearly demonstrate their adeptness as apex predators. Recognition of this inherent "wildness" is often lost when handling birds of prey in man-made spaces, and may even be diminished outdoors if too many people (and subsequent

distractions) are present. Intimate outdoor settings, on the other hand, make clear the unique capacity for raptors to engage with their environment in ways beyond human ability, such as Dakota's directed attention at the family of raccoons behind us. In this way, resident birds taken out on walks provide a lens through which attentive volunteers may enhance their awareness of the natural world. Further, as these "wild" behaviors exhibited by raptors are born of their relationship to the environment, handling a bird in these settings makes the experience both novel and unique, wherein trainers learn from those they are "training."

Education

Education is a central tenet of the Raptor Program, as the primary reason for housing raptors at the park is to teach the public about why they should help protect them. Participation in educational activities is one of the most important ways that BOP volunteers can contribute to the Raptor Program due to the increased demand for programs locally. Educating the public generally falls into three categories: on-site Q & A's, offsite lectures, and informal outreach events.

Onsite Q & A's

In addition to viewing the resident raptors in display aviaries, park visitors have the opportunity to see each bird "up close and personal" during their daily handling, training, and feeding sessions conducted by volunteers. The Q & A sessions are very informal and often take place on the outside deck, allowing guests to sit down, relax, and talk to volunteers about a range of raptor-related topics. They also provide a chance for visitors to ask questions, take pictures, and learn more about conserving native raptor species in the wild. As the meet-and-greets happen daily, numerous behavioral observations between visitors and volunteers were recorded.

The most interesting finding within Onsite Q&A data was the observable increase in public engagement by volunteers after putting a bird on their glove. Prior to handling, volunteers typically spend time talking among themselves, preparing diets, and cleaning habitats. While many of these tasks are carried out in view of the public, far fewer interactions take place between guests and volunteers in comparison to the frequency of these interactions post-handling. Similar changes in behavior were also noted among some of the quieter, more reserved volunteers that, after taking out a bird, became noticeably engaged in conversations with visitors and other BOP handlers.

Offsite Lectures

For a small donation, local businesses and organizations can have a few of the resident raptors brought to them for a formal lecture on native bird of prey species. The presentations are given by volunteers, and typically include a brief overview of the Raptor Program, introduction to the birds (unique adaptations of the species, individual history, etc.), Q and A session, and a "meet and greet" for the audience to take pictures. In total, the lectures are an hour long and require extensive knowledge about each "avian ambassador", as well as information about raptor biology, falconry, and conservation to accurately answer questions. During the study, offsite programs were requested by school groups, assisted-living facilities, private businesses, and environmental organizations who wanted to learn more about the birds, and, in particular, get a chance to see the animals up-close. The volunteers responsible for conducting these lectures are primarily senior handlers that have experience in community outreach, teaching, and working with raptors. As these formal programs require both public speaking skills and ability to adjust subject matter accordingly (shifting between a talk for ten year olds to their parents, for example), volunteers tend to ease their way into this facet of the program. To build confidence in

this arena, newer raptor handlers may begin by hesitantly answering informal questions asked by guests at the park, as well as listen to the responses provided by more knowledgeable volunteers. This process provides an opportunity for seasoned volunteers to educate and interact with new BOP recruits, and can be extremely rewarding for volunteers to be granted permission to lead these lectures.

Outreach Events

One of the primary modes of fundraising for the Raptor Program is attending community outreach events and showcasing the resident birds of prey at The Narrows. The offsite event set-up typically includes a 10 x 10 tent and table/chairs from which volunteers can interact with the public and hand out literature, while other volunteers stand around the booth and display different birds on glove. In comparison to lecture-style programming, outreach events are very informal, and primarily serve as a way to promote The Narrows, collect donations, and provide short bits of information to visitors. Due to the fast-paced nature of these events and the tendency of animals to draw in crowds, volunteers spend the majority of their time answering basic questions about the birds (ex. How old is he/she? What happened to them? Are they injured?).

The process of repeatedly answering the same questions is seemingly redundant, however, it is hugely beneficial for new volunteers that have little knowledge about raptors. For them, outreach events provide a way to learn the basics and repeat what they have learned to the public in an informal setting. Further, these all-day events provide a space for volunteers to get to know one another away from the park, especially while taking breaks from interacting with the public.

Volunteer Community

Data collected in Stage 1 pointed to a strong sense of community among volunteers with the Raptor Program. Hours of observing the ways in which volunteers engaged with one another on the outside deck, walked together throughout the park, and worked as a team in various settings suggested that the Raptor Program helps facilitate human relationships, too. As a common interest, the resident birds were often the primary topic of conversation at the outset of volunteer interactions recorded at The Narrows. These "raptor-related" discussions such as program expansion and updated training protocols were generally followed by casual conversation, story-telling, and friendly banter. Focus group discussions in the latter stages of research emphasized this community-building aspect of the Raptor Program, particularly in response to questions that concerned how people outside of the program perceive raptor handling. The shared notion that without firsthand volunteer experience, other people "just don't get it" pointed to a mutual understanding among participants that connect them with other volunteers to varying degrees.

CHAPTER 5:

STAGE 2 RESULTS

Introduction

Stage 1 of this study aimed to address various human and non-human actors within the Raptor Program that, together, worked to facilitate raptor-human interactions. Stage 2, on the other hand, seeks to identify the micro-level processes within the interactions themselves, to later determine whether or not these processes can be considered "self-regulatory." In contrast to existing models of self-regulation in psychology, the methodological approach used to deconstruct the process of raptor-human interactions required that non-human agents (ex. Raptors) be considered significant actors within a larger "regulatory" network. Previous experience as a raptor handler taught me that birds of prey exhibit specific behaviors based on changes in stress levels, features that very much resemble the raptor equivalent of how "regulation" happens. Drawing on a combination of personal experience and Stage 1 field notes (including various raptor/human behaviors observed), I formulated a model depicting specific raptor and human behaviors that I considered to be both significant and observable parts of the process through which regulation is achieved. The six features listed in the original model were: Novelty/Threat, Selective Attention, Modified Response, Physiological Feedback, Reward, and Resilience. To clarify, these features were physical responses and behaviors displayed by the bird and their human handler that I had observed or personally experienced. Ethnographic data

collected via interviews and focus groups gave context to this original model by discerning between assumptions about the meanings of certain behaviors, versus how these behaviors were interpreted by volunteers. The results confirmed the presence of each feature included in the original model, with participants describing their interactions with raptors similarly to how Bagozzi explains the processes of his regulatory model outlined in the review (Chapter 2). The findings for this study, however, only partially align with the processes accounted for by Bagozzi in his linear interpretation of self-regulation. Instead, the study found that while volunteers reported feeling calmer, more relaxed, and happier following their interaction with a raptor, the process of achieving that goal was far more dynamic and, at times, counterintuitive when compared to what Bagozzi suggests as achieving regulation through "goal attainment." In other words, improved mental health outcomes were not achieved through singular processes as Bagozzi suggests. Instead, significant variation existed within similar "steps" towards positive changes in mental health, including occasional negative feedback (primarily from raptors) that would likely be neglected in regulatory models in psychology.

Raptor-Human Interactions as a Dynamic Process

Drawing on Stage 1 observations and firsthand experience as a raptor handler, the model below represents the six key features that are typically observed in raptor-human interactions. Novelty/Threat response refers to the uneasy body language exhibited by both raptors and humans in the moments immediately following a raptor being taken out of a habitat. Even experienced handlers, such as myself, must be cautious in the initial few minutes upon handling a bird to properly gauge their "mood." Being a bit wary at first, in the context of raptor-human interactions, is a necessary precaution to avoid potentially being bitten or scratched, as well as to ensure the animals safety. This is something I still tell new BOP volunteers concerned about

being nervous around certain birds – that being nervous is good, as it proves the new volunteers are aware of the fact that raptors are wild animals, requiring time to become accustom to the presence of new handers. By extension, paying selective attention to the animal allows handlers to get an even better sense of how the bird is responding to both being handled, and the person handling them. Body language is unique to each species, as well as each individual animal, so the process of learning these various quirks takes time. For example, an inexperienced trainer might assume that vocalizations made by a bald eagle indicate excitement and/or happiness. To me, however, these are clear signs the animal is agitated as bald eagles typically resort to loud squaks in order to deter anyone standing close by. In this case, I might consider moving the eagle to a more isolated location if the surrounding area is too crowded, or, if crowding isn't an issue, may simply increase the distance between my body and the bird to try to calm the animal down. As seen in the model, modified response refers to the steps taken by handlers attending to particular raptor behaviors (moving to a less-crowded venue and/or giving the bird space), while a raptor "calming down" in response (as is evident via certain behaviors) is considered "physiological feedback." Per the earlier example of Dakota spotting a nearby family of raccoons, her flattening the feathers on her head and bobbing up and down is just one form of physiological feedback. Others include bating (jumping off of the glove), panting, preening, and rousting.

Selective attention, modified response and physiological feedback are recurring facets of raptor-human interactions, as raptors are consistently monitoring their environment and reacting to particular stimuli. This requires handlers to be both attentive and responsive to what a bird "tells" them via behavioral feedback. Importantly, efforts to remain attentive or respond appropriately to these behaviors does not always go as planned as raptors can, at times, be

unpredictable (though I'm sure for reasons humans cannot understand). This is why I have included variants of each of these three features to account for times an interaction didn't go as planned (1. pay attention to the bird 2. adjust appropriately 3. bird exhibits positive behavior), both in my personal experience and those observed among volunteers. One notable example of a "less-than" favorable interaction happened in my early years of working with birds, in which I accidentally released a barred-owl into a crowd of screaming second graders. My lapse in attention hindered any ability to calm the bird down and receive positive physiological feedback (she hated me for a while), and so did not experience the "reward" of my efforts to relax her. As the fifth feature in the model, "Reward" refers to the feeling of gratification experienced by volunteers following confirmation that a bird has responded to their efforts. This "feel-good" sensation is comparable to a dog finally learning to "stay" after many hours of practice. However, as expressed in my personal example earlier, achieving this reward is not always possible given the highly variable nature of raptor-human interactions. For this reason, I have also included a variant for this feature, as is determined by the interplay of attention, response, and feedback. Resilience, the last feature of the model, is a way to express the forces at play between the time a reward is/isn't experienced, and the return of volunteers to handle birds at The Narrows. In other words, resiliency can be any number of things, from the time spent reflecting on the interaction upon arriving home, to how a volunteer describes their experience of handling a new bird to their friend, to posting a picture on social media illustrating training ability and receiving positive feedback. As expressed in Chapter 1, volunteers return to the park as unpaid staff for variety of reasons such as a fondness for teaching, a need for quiet time in nature, and/or the sense of fulfillment that volunteering provides post-retirement. Personally, my reasons for volunteering are constantly evolving and cannot be pinned to a single facet of

working with birds of prey. For the purposes of this study, the model below is just one way of representing observable features I believed were both significant and potentially applicable to models of self-regulation in psychology. The inclusion of variants as a crucial component to this system of relating, however, draws attention to what may be learned in exploring multiple versions of the same process, particularly those deemed "unfavorable" or "lying outside" of the majority. In-depth descriptions of each feature and the ways they were revealed through data collected in Stage 2 are listed below.

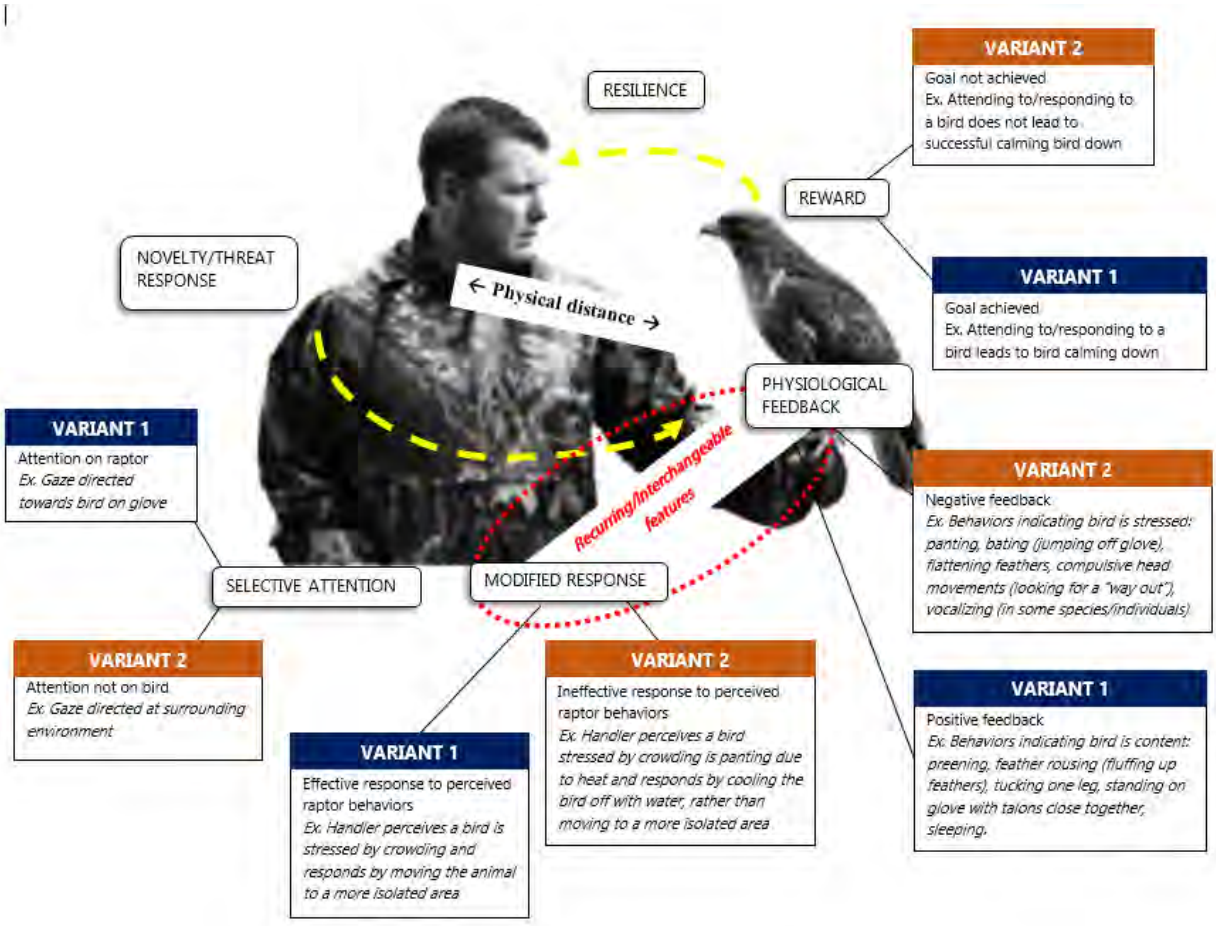

Figure 2. Variant Model of Features in Raptor-Human Interactions

Novelty/Threat Response

Stage 1- Novelty/Threat Response refers to the unfamiliarity and intimidation that volunteers often report when working with a raptor for the first time. Raptors are dangerous; equipped with powerful talons that act like a vice grip, and sharp beaks designed for ripping and tearing flesh - they are perfectly adapted killing machines. As threatening animals by design, working with birds of prey requires a great deal of training, as one misstep could potentially result in serious injury. For this reason, handlers must actively focus on maintaining an appropriate distance from the animal, as well as pay close attention to how the bird is behaving.

Stage 2 –

Interview Questions:

a. Describe your first experience holding a bird of prey. What kind of bird was it?
b. How did you feel in those initial moments of having a bird of prey sitting on your glove?

The first interview questions confirmed the presence of both novelty and threat as an initial response. All participants expressed, in their own way, feelings of nervousness/anxiousness, fear, and concern for their safety while describing their first interaction with a bird of prey. The answers recorded from participants ranged from worrisome thoughts that "the bird was gonna rip my face off" or "peck my eyes out", to the fear invoked by unfamiliar handling techniques. As one participant stated, "Oh man I was nervous. Here I was with this hawk on my arm thinking 'If this thing decides it wants to clamp down on my finger and not let go, what the hell am I going to do? Probably not a whole lot.' Like with dogs, even if you don't have one, you probably have an idea of how to train them just because so many people have them as pets. Don't know too many people I could call for advice that own red-tailed hawks though…" In addition to threat responses, many participants (n = 24) also described their initial feelings as a variation of

"excited, but nervous", pointing to the role of novelty in these moments. This feature was expressed in answers such as "I have always loved owls, they're my heart, so getting to hold one was completely mind-blowing – I was beyond excited. But, at the same time, I felt so scared! Like I would have never thought that the first time holding my dream animal would actually be kind of terrifying!" Other responses (n = 8) that described their initial high arousal emotions such as "thrilling" and "ecstatic", for example, were considered novel responses.

Selective Attention

Stage 1: There are a variety of observable raptor behaviors that reliably indicate how a raptor is "feeling". For instance, panting, bating (jumping off a glove), and/or perching in a wide stance, are all behavioral characteristics demonstrating certain levels of discontent. More positive behaviors include preening (grooming), rousing (erecting feathers and shaking them out), and perching in a closer stance with one foot tucked into the body. As part of the orientation process, volunteers are trained to not only recognize these behaviors, but also to modify them if a bird demonstrates any type of distress. The term "Modified Response" refers to the different techniques a handler may use in order to help calm an anxious or agitated bird of prey.

Stage 2:

Interview Questions:

a. What was your body doing? Were you walking? Sitting?
b. Was there anything else going on in the environment? (Gets to where their attention was)

Findings in Stage 2 confirmed that participants selectively attended to the raptor on their glove throughout their first interaction. Responses to the question "What was your body doing?" were highly variable and, interestingly, about half of the participants could not recall their

particular position during this encounter. However, all participants expressed the intensity of focus to varying degrees by watching the animal' behavior and reactions to stimuli. Further, more than half of participants (n = 32) did not remember anything about what was going on in the environment (second question) or surrounding areas. This inability of participants to recall what was happening in the environment, when combined with responses vividly describing what the bird was doing (next section), confirm that selective attention plays a key role in raptor-human interactions. As an aside, many of the volunteers (n = 18) seemed quite surprised by the difficulty in recalling environmental factors, suggesting that selective attention happens without intentionally doing so. As one senior volunteer stated, "Holy shit! I don't remember! I don't know who was coming and going from the nature center, I don't even know what other volunteers or birds were around. It's like I was totally tunnel vision from the time I picked Shay (red-shouldered hawk) up, to the time I put her back. Almost like, and this sounds strange I know, when I put her back and walked out of the habitat, the world came back to me."

Modified Response

Stage 1: This is one of the most important skills a volunteer must learn, as prolonged distress can directly affect the health of a raptor. Per volunteers with the Raptor Program, the most effective way to ensure a bird stays relaxed, is to relax yourself. By suspending reactivity, relaxing your muscles, reducing movement, and speaking quietly, a distressed raptor will likely respond by exhibiting more behaviors considered "positive" by study participants that I have termed "Physiological Feedback".

Stage 2:

Interview Questions:

a. What was the bird doing?
b. What recommendations would you give someone if they wanted to get a bird to "like them?"

The answers provided by participants to the interview questions listed above provided evidence for the various ways volunteers modify mental and physical responses to raptor behavior. As mentioned in the previous section, participants were able to recall the actions and overall demeanor of the raptor they first handled when asked "What was the bird doing?" Although the first question aimed to address observable behaviors exhibited by the bird, the majority of responses (n = 37) included additional information about the emotional/mental state of the animal. Descriptions such as "She was really jumpy and clearly wasn't happy", "He was just looking at me and I could tell he was angry with me", and "She was upset" suggested that participants closely associate different behaviors with specific emotions. Similarly, the recommendations given by participants for the second question emphasized the attitude/mental state of the handler, rather than specific handling protocols. Responses like "You have to get your read right if you're gonna work with a bird. Otherwise, they're gonna absorb that, just like people do" and "Don't be too amped up. Just go with the flow and remain calm" support the notion that successful interactions involve mental and physical changes. Additionally, many participants (n = 14) included ideas about a necessary level of respect being shown to the animal, including recommendations for maintaining a "respectful distance" from the raptor on glove.

Physiological Feedback

Stage 1: Actively observing a bird respond to efforts on the part of the handler is inherently exciting, as these changes validate the time and effort spent trying to remain calm.

Stage 2:

Interview Questions:

a. What did the bird think of you?
b. How can you tell?
c. Did anything change from the time you first picked the bird up to when you put the bird back in the habitat?

There was significant overlap in the responses to interview questions aimed at identifying physiological feedback (this section) and modified response (previous section). This type of parallel play among interview answers suggests that physical/mental modifications and observable behavioral changes in the birds are closely linked. Answers to "What did the bird think of you?" and "How can you tell?" varied from negative participant responses (n = 18) like "She seemed pretty pissed off at the new guy!" to more positive descriptions by participants (22) like "I think we got along pretty well almost immediately. We just connected". Although the initial impressions of what the bird thought of volunteers were varied, every participant provided a justification for their answer by describing observable raptor behaviors. These results confirm that an association exists between how a bird is "feeling" and what the bird is "doing". Further, the inclusion of information pertaining to the bird's mood from the modified response questions carried over into the latter questions about changes that should/could take place while working with a raptor. Answers to these questions highlighted the steady increase in comfort and relaxation throughout the initial interaction by one or both parties (volunteer and the bird). All

participants, in some way, described the ways in which the bird became noticeably more relaxed towards the conclusion of their interaction. Additionally, the majority of participants (n = 37) noted changes within themselves such as "I felt a lot better, like I could get out of my thoughts" and "I just felt happy, which is something I hadn't felt in years". Interestingly, some participants expressed that while the bird seemed to become "more chill", they themselves "just felt nervous the whole time", or "worried they were going to do something wrong". In sum, Stage 2 results confirm that specific raptor behaviors are discernable and indicative of particular mental states to BOP volunteers. The findings also suggest that volunteer responses to the same observable behavior (ex. The bird becoming calmer) depend highly on individual context.

Reward

Stage 1: Positive behavioral changes displayed by a bird act as a "Reward" and incentivizes further training.

Interview Questions:

a. Do you have a favorite bird?
b. Could you describe your favorite or one of your favorite one on one "moments" with this bird?

Stage 2 findings confirmed that observable changes in raptor behavior serve as a reward for participants that invest time handling the birds. Participants generally described one to three favorite birds due to the animals having different "personalities". Answers to the second question included a variety of anecdotes, with approximately half of the participants (n = 22) reflecting on the way a particular bird responded to them in a uniquely positive manner in comparison to other handlers. As an example, one participant discussed his "connection" to a resident barred owl, stating that "The bird didn't like anyone. As soon as someone would walk into her habitat, she

would jump to the ground and run away – she looked terrified. I spent a lot of time with her off glove, like talking to her while I cleaned her habitat and everything. Then one day we needed to take her to a program and I thought 'Oh boy, she's not gonna be happy about this.' But, I walked in, put my glove up to her, and she stepped right up. She had never done that with anyone else. So it was a really special moment for me – like all of my time spent talking and being around her actually paid off." Other participants (n = 35) reflected on moments of connection, describing these experiences using phrases like "bonding moment", "mutual understanding", and "acceptance".

Resiliency

Stage 1: "Resiliency" refers to the sense of mastery discussed by volunteers following an interaction with a bird of prey. This sensation refers to both the overcoming of fear and the validation as a handler.

Stage 2:

Interview Questions:

a. How did you feel at the end of the interaction?
b. What would you tell someone who is scared of birds about the experience?

Results from Stage 2 interview questions found that all participants found their first interaction with a bird of prey to be positive. As previously discussed in the results for "Physiological Feedback", some participants (n = 18) expressed that although the bird appeared to become increasingly relaxed over the course of their interaction, they (the handler) continued to experience high levels of stress. However, the same participants described the moments following the end of the interaction very differently, all of which they considered to be positive.

Responses such as “I felt elated! Like I had just done something incredible and made it through without anything bad happening” and “As soon as I put the bird back up, I felt like I could breathe, and then got a chance to sit there and think ‘Wow. That was pretty damn cool’” helped confirm these findings. Further, participants expressed how their feelings towards the end of the interaction served as an impetus towards becoming more involved with the birds, with many volunteers (n = 30) stating that “they just wanted to do it again!” In a similar spirit, responses to the second interview question emphasized a “just do it” attitude in some capacity by participants (n = 14), with suggestions ranging from simply getting close to the bird while cleaning, to handling smaller birds because they are less intimidating. All participants included an explanation for “why” someone who is scared of birds should try working with them, largely that the eventual “feeling” or “payoff” is worth the risk.

Summary

Modelling any kind of social system is a valuable addition to the forefront of anthropological research as it demands a re-shaping of how ethnographic data is interpreted. While the model is a useful tool for conceptualizing and/or presenting research findings, it is the process of modelling in itself that is truly valuable. Determining how to best represent the dynamics of inherently complex social systems is a formidable challenge, as it requires a refinement of broad-based ideas to get to the “meat and potatoes” of what is really being learned. In relation to Stage 2 of this study, the process of modelling raptor-human interactions revealed significant variants of features that may be likened to self-regulation models in psychology. These findings not only allow for a more comprehensive look at how raptor-human relationships are created, but also point to the variability within each process that may have gone unaccounted for in models formulated by psychologists such as Bagozzi.

CHAPTER 6:

DISCUSSION

Introduction

By exploring the programmatic and regulatory mechanisms at play within the Raptor Program at The Narrows, this study demonstrates how neuroanthropology can be used to systematically address methodological challenges currently facing social and cognitive scientists alike. On the one hand, attempts to legitimize animal-assisted therapies through research have come up short due to a lack of scientific rigor and/or overreliance on causative approaches to mimic studies in psychology. On the other hand, reductionist approaches employed in cognitive science do not account for the ways that context, as well as the lived experiences of individuals, may significantly influence results. Neuroanthropology, however, allows for the methodological strengths of both fields to be incorporated into a larger interpretive paradigm, wherein anthropological theory is merged with what we know about the brain and culture.

I chose to employ a neuroanthropological approach to this study based on my extensive background as a raptor handler and co-founder of Avian Veteran Alliance. These experiences pointed to the significance of not only firsthand encounters with birds of prey, but the larger social/structural networks that allow the Raptor Program to function in the first place. Studied in isolation, however, it would not have been possible to do good research, as both facets are deeply embedded within the other. Per the review, however, this happens all the time in studies that address holistic healing practices ranging from hippotherapy to ecotherapeutic gardening, where

the primary emphasis is on an individual and their successful treatment, rather than the processes involved to get there. Similar critiques have been made in regards to program development studies and the false notion that "…a singular knowledge system" has the capacity for "coherent project analysis" (Mosse 2004: 34). David Mosse argues that in order to understand the efficacy of structured programs, social scientists must not ask "whether a program succeeds, but how 'success' is produced" (Mosse 2004: 8). Although his statement was intended primarily for up-and-coming development anthropologists, the same idea can be applied to neuroanthropological research and its aim to bridge macro and micro level processes.

Integrative Approaches to Research

In the spirit of Mosse's argument for an emphasis on "process" rather than "outcome" within anthropological research, insights gained from the process of modelling were far more significant than information derived from the model itself. Further, the process of facilitating raptor-human interactions spans far beyond the features represented in the model, both in terms of time and space, as well as sociocultural dynamics involved in sustaining the larger program. Broadening the scope of actor-networks to include non-humans (raptors, charisma, etc) offers one way to interpret data collected on different, simultaneously occurring scales. As discussed in Chapter 4, hours spent as a participant observer provided an opportunity to identify specific actors (charismatic leadership, outdoor settings, etc.) within the Raptor Program that contributed to how its success was produced. On a smaller scale in Stage 2, these actors were represented in the form of six features within a model of raptor-human interaction based on data from interviews and focus groups. In this way, modelling served as another useful interpretive tool by providing fine-grained information about "how" successful (or not) interactions are produced, to later connect back to larger bodies of research. The research methodology employed in this study

also assists in highlighting the importance of triangulating field methods to collect ethnographic data. Employing all three qualitative methods (participant observation, semi-structured interviews, and focus groups) to unpack how raptor-human relationships are facilitated allowed for a more comprehensive analysis of processes only partially addressed in empirical studies.

By exploring how raptor-human interactions *happen* within the context of larger programs and individual experience, this study aimed to reveal the underlying mechanisms that facilitate the process of trans-species relationship building. The results of the study suggest that raptor-human interactions can be broken down into various moving parts that operate similarly to self-regulatory cognitive processes as part of a larger dynamic social system. Fine-grained ethnographic methods helped to inform the different aspects of the Raptor Program that worked to facilitate raptor-human interactions. Further, comparative models in psychology assisted in understanding the efficacy of raptor-assisted interventions using a neuroanthropological approach. Drawing on stage 1 and 2 results, this project highlights the value of in-depth anthropological study on not only trans-species relationships, but the process by which these connections are built, mediated, and sustained through semi-structured programs and individual experience.

Deconstructing Dynamic Systems Using Neuroanthropology

The incorporation of actor-network theory into ethnographic research on raptor-human relationships helps draw attention to underlying sociocultural processes facilitated by human and non-human actors. More broadly, the same approach can be used to address current conceptions of animal-assisted therapies by accounting for features underlying the Anthropocene. As previously discussed, the body of research on animal-assisted interventions is limited in scope due to methodological constrains and narrow view of the ways human-animal interactions can

positively affect mental health. These projects are further constrained by the limited number of animal species (mainly dogs and horses) accounted for in projects seeking to confirm the efficacy of animal-assisted interventions. The exact reasons for this canine/equine preference are lengthy and span beyond the scope of this paper (ex. History of animal domestication, rise of pet culture, etc.), however, addressing two specific characteristics of both species, intelligence and "cuteness" factor, helps to illuminate how animals with dissimilar characteristics (i.e. raptors) may enter the frame of future adjunctive therapy programs.

Animal species chosen for assisted health interventions are generally those considered to be highly intelligent and capable of interpreting complex emotions. A dog laying it's head on the lap of a specific patient, for example, may be perceived as having detected hidden feelings of isolation from someone with mental health problems. Similarly, a disabled child seen forcefully petting the face of an otherwise skittish horse will most likely be interpreted as having a "special connection" due to a horses capacity for "understanding" the child's individual needs. This kind of selfless intentionality on the part of animals to help humans forms the basis for how AAI is understood in the mainstream. Additionally, assistance animals tend to possess a certain "cuteness" by way of exaggerated physical features and soft coats for tactile interactions i.e. petting. In other words, AAI animals share external characteristics that align with western conceptions of positivity and security, begging the question: To what extent does ethnocentrism play a role in facilitating animal-assisted interventions and, more importantly, how might this explain previous methodological failures to validate improved health outcomes?

The popularity of cute, intelligent animals used in health interventions points to the anthropocentric paradox that has become so heavily embedded in much of how humans connect with the natural world. Using AAI studies as an example, the same animals acknowledged for

being uniquely suited to recognize, respond, and assist humans overcome particular challenges, are those animals whose agency is often overlooked and/or denied altogether in research. One way to address this problem might be to consider how animal-assisted interventions have been shaped by sociocultural shifts in the Anthropocene. We know that the distance between human beings and the natural world is greater than ever before, but identifying the specific processes leading up to this divorce may provide valuable insights into the efficacy of AAI. By extension, investigating the types of mechanisms responsible for promoting and sustaining the predominantly western notion that of "Us versus Them" will help to inform agentive discrepancies. A full deconstruction of animal-assisted interventions in the Anthropocene would be a significant contribution to broader, integrative literatures by revealing dynamic forces (such as the role of language, technology, and politico-economy) underlying the transformation of multispecies landscapes.

By critically evaluating *how* current approaches for studying AAI are framed by the Anthropocene, contemporary projects exploring human-animal relationships will be made more comprehensive through their acknowledgement of multispecies paradigm shifts. Taken together with actor-network theory, acknowledging the role of AAI animals as significant agents within healing systems allows room for understanding the process of achieving positive therapeutic outcomes. Importantly, these networks must remain highly flexible in their account of mechanisms that exist within, as well as outside the scope of particular research objectives. This is because ANT theory rejects linear approaches to research due to the inevitability of methodological contradictions. For example, a project whose research concludes that people who own dogs are generally happier and healthier is fundamentally flawed, both in its vast oversimplification, as well as its reduction of animal agents to anthropocentric extensions of

human beings. This is evident in the ways that explanatory models are used to represent causal relationships between the presence of animals and improvements in health, revealing little about the processes in between. Studies in psychology have received similar critiques, such as Bagozzi's model of self-regulation, due to assumptive results rooted in traditions of association within the discipline. The inclusion of variants as part of an overall research design, as employed in this study, offers one way to address research bias, as well as expand the breadth of knowledge produced by integrative projects.

Modelling and Differential Effects

The idea that knowledge is acquired through associative learning is part of a long standing tradition in cognitive psychology that examines human behavior through stimuli and response. Self-regulatory models provide one way to evaluate how behavior is modified through association by including particular inputs and responses, as seen in Bagozzi's representation of processes leading up to "goal attainment." While there is something to be learned in examining brain-behavior associations, it does not tell the whole story about what happens when learning is dissociated.

The model constructed in Stage 2 of the study aimed to evaluate raptor-human interactions based on a set of key, observable features identified as a participant observer, as well as through my personal experience as a BOP volunteer. To review, the six features included in the model were described as: Novelty/Threat, Selective Attention, Modified Response, Physiological Feedback, Reward, and Resilience. For the reasons described in previous sections, the methodological approach used for this project sought to push past reductionist views of both AAI and self-regulation as a singular process. This is why greater emphasis was placed on the types of knowledge produced through the process of modelling, rather than the model itself.

To illustrate the nuanced entanglement of various processes that facilitate raptor-human interactions, the model includes variants of specific behaviors identified within four of the features (Selective Attention, Modified Response, Physiological Feedback, and Reward). Myron Hofer refers to the influence of variants within dynamic systems as "hidden regulators" in his study on attachment, separation, and loss among rat pups. Moving away from traditional attachment theory in psychology, Hofer argues that "motivational-behavioral control system[s]" (Bretherton, 1985) lie at the center of attachment and that "What appears to be a centrally integrated pattern is in fact an assemblage of individual processes" (Hofer 1994: 194). The manipulation of variables in an experiment both reveals information about the mechanism being changed, as well as the adaptive capacities of the system at large. Taken further, the same approach can be used in non-clinical environments through the use of fine-grained ethnography to study how these variables are manipulated by and through the natural world. A comparative approach, in this case, is effective for understanding differential effects of variants that are part and parcel of raptor-human interactions, as illustrated in Figures 3 and 4. Both figures highlight particular feedback processes that were recurrent throughout the ethnographic data collected for this project. Figure 3 points to specific behavioral and sensorimotor processes that comprised what was considered by participants as "positive" interactions. Figure 4, on the other hand, describes emotive processes underlying volunteers' reasons for consistently dedicating unpaid time to the Raptor Program at The Narrows.

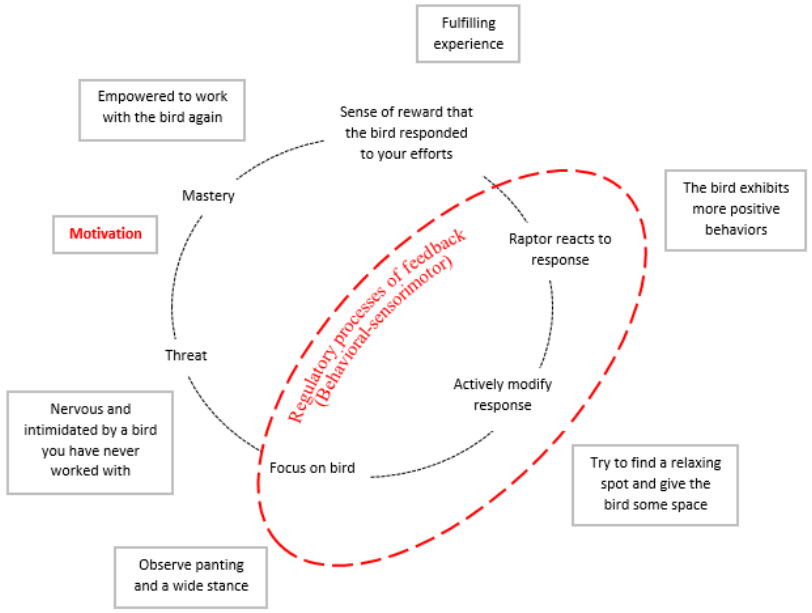

Figure 3. Behavioral-sensorimotor Feedback in Raptor-Human Interactions

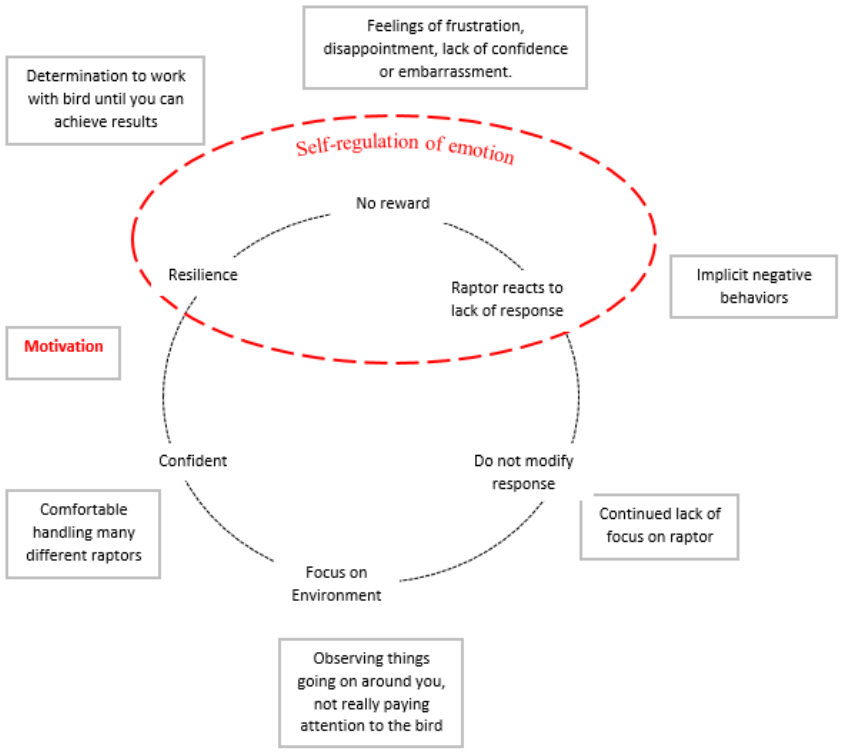

Figure 4. Self-regulation of Emotion in Raptor-Human Interactions

Future Research and Applied Implications

This study on raptor-human interactions provides an integrative platform from which to expand research in the areas of multispecies relationships, holistic healing practices, and natural recovery. As apex predators, raptors do not fit into current models and/or public conceptualizations about how animal-assisted interventions work, primarily due to methodological approaches that do not align with the essence of what animals are: products of the natural world. This is a particularly formidable obstacle to legitimizing adjunctive animal therapies – as measures of success are either too broad based or reductionist in their analysis. I hope to explore this constraint of AAI further (among others identified in this study) by developing a comprehensive statistical measure for evaluating the efficacy of AAI programs as a doctoral candidate beginning in fall 2018. Merging ethnographic data and first hand experiences with statistical analysis to come up with an appropriate measure will be beneficial, as it may potentially reduce skepticism within the medical community about AAI even further. Additionally, these measures may expand the breadth of variants found among animal-human interactions to be used for comparative analysis later on. These variants include the role of gender in shaping animal-human experiences, as the methods employed in this study did not point to discernable differences regarding the impact of handling raptors in the lives of male versus female participants. Addressing perceivable and/or individual variants of experience among human and animal actors may also result in the formulation of best practices for anyone struggling to operate an animal-assisted program by identifying species-specific variance, as well as broad based features that are generally applicable to improve health outcomes. Quantifying the efficacy of raptor-human interactions in facilitating health improvements may also provide

those facilitating alternative, non-pharmacological therapies with a valuable tool necessary for gaining support for holistic treatments that have the potential to save lives.

As Silvia Mutterle states, raptor-human interactions create "a cultural metamorphosis of wild ethics where hawks tutor humans…," (Mutterle 2016) challenging traditional ideas about human means of relating. By developing novel ways to explore relationships between human and non-human species, we, as researchers, open ourselves up to a largely uncharted landscape whereby acknowledging the autonomy of animals is seen as an opportunity rather than a limitation. The study of animal-human interactions provides a unique opportunity to rethink our own means of relating to the world around us, regardless of language, appearance, culture, or species.

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APPENDIX A:

USF INSTITUTIONAL REVIEW BOARD APPROVAL

USF
UNIVERSITY OF
SOUTH FLORIDA

RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
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February 5, 2018

Kaleigh Hoyt
Anthropology
St. Petersburg, FL 33705

RE: **Expedited Approval for Initial Review**
IRB#: Pro00029828
Title: Raptors and Humans: Exploring Alternative Therapies in Non-Clinical Environments with Birds of Prey

Study Approval Period: 2/5/2018 to 2/5/2019

Dear Ms. Hoyt:

On 2/5/2018, the Institutional Review Board (IRB) reviewed and **APPROVED** the above application and all documents contained within, including those outlined below.

Approved Item(s):
Protocol Document(s):
Protocol Version #1 1.31.18

Consent/Assent Document(s)*:
Informed Consent Version #1 2.5.18.pdf

*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab. Please note, these consent/assent documents are valid until the consent document is amended and approved.

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110. The research proposed in this study is categorized under the following expedited review category:

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval via an amendment. Additionally, all unanticipated problems must be reported to the USF IRB within five (5) calendar days.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

Kristen Salomon, Ph.D., Vice Chairperson
USF Institutional Review Board