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Evaluating compassion satisfaction and the risk of compassion fatigue among those working at non-human primate sanctuaries and wildlife centers

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EVALUATING COMPASSION SATISFACTION AND THE RISK OF COMPASSION FATIGUE AMONG THOSE WORKING AT NON-HUMAN PRIMATE SANCTUARIES AND WILDLIFE CENTERS

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by

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ABSTRACT

EVALUATING COMPASSION SATISFACTION AND THE RISK OF COMPASSION FATIGUE AMONG THOSE WORKING AT NON-HUMAN PRIMATE SANCTUARIES AND WILDLIFE CENTERS

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Compassion fatigue, an occupational risk commonly associated with caregiving professions, can have adverse effects for individual employee wellbeing, organizational productivity, and the quality of care that patients receive. Within animal-care worker samples, previous research suggests that around 25 percent of employees are at a high risk of developing compassion fatigue (i.e., experiencing burnout and secondary traumatic stress concurrently). To my knowledge, this thesis is the first study to explore compassion fatigue within the primate sanctuary field. Thirty-nine eligible participants completed an online survey that probed professional quality of life via the ProQOL 5, perceived workplace support via the Trauma-Informed Organizational Culture (TIOC) survey, observation frequency of different primate behaviors, demographic and work characteristics, and the most challenging and rewarding components of providing care to captive primates. Findings suggest that this sample had significantly higher rates of compassion satisfaction and lower risk of developing compassion fatigue compared to other animal-care worker samples. Correlational and multiple regression analyses revealed that continent of residence, perceived workplace support, gender, and career length were all important predictors for burnout, secondary traumatic stress, and

compassion satisfaction within this sample. Free-response answers further indicated that there are a wide variety of challenges and rewards within this field which may impact burnout, secondary traumatic stress, and compassion satisfaction.

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CHAPTER I

INTRODUCTION

The current study is interdisciplinary in nature and draws on literature from traumatology, animal husbandry, primatology, and occupational stress fields. The intent was to explore different components of compassion fatigue and evaluate the risk of such in primate caregivers. Compassion fatigue is comprised of burnout and secondary traumatic stress (STS), separate constructs that both result from caregiver-oriented work. These conditions come with many potential negative consequences for the individual experiencing them, the clients they care for, and their employing organization. Previous research has validated Figley's (1995) theory that compassion fatigue is an occupational risk within many helping professions and warrants attention as an occupational hazard. Compassion satisfaction (CS), or the joy that one gains from their work, is a closely related component believed to mitigate burnout and STS.

Among animal shelter staff, STS can occur when employees are aware of an animal's suffering or abuse (Figley & Roop, 2006). A majority of non-human primates housed in sanctuaries and wildlife rehabilitation centers have lived through experiences considered atypical for their species. Some experiences, such as being reared by humans rather than mothers, have been linked to increased stress, abnormal behaviors, and limited social skills in later development (Freeman & Ross, 2014; Jacobson et al., 2017; Kalcher-Sommersguter et al., 2015; Lopresti-Goodman et al., 2013). Therefore, the current study also evaluated the potential additional risk of experiencing compassion fatigue for caregivers when the populations they care for show species-atypical or socially maladaptive behaviors.

To date, compassion fatigue research in the animal-care industry has focused mainly on veterinary staff, with few studies investigating burnout, STS, and CS in individuals who care for exotic animals. To the best of my knowledge, no studies have yet investigated this issue among individuals working at primate sanctuaries. Understanding this specific population's CS or risk of burnout and STS could be beneficial for sanctuary managers, caregivers, and resident primates. Awareness of those factors that contribute to CS or that are associated with low burnout and STS risk may assist organizations in maintaining a more productive workforce, lowering employee turnover, and ensuring non-human primates receive the highest quality of care possible.

CHAPTER II

LITERATURE REVIEW

Compassion Fatigue and CS in Human Services

Human Caregivers

The term caregiver is diverse and can be applied to countless roles. Several definitions exist with individuals defining the word based on their personal experiences of giving or receiving help (Hermanns & Mastel-Smith, 2012). Hermanns and Mastel-Smith (2012) proposed the following definition that "caregiving is made up of actions one does on behalf of another individual who is unable to do those actions for himself or herself" (p. 5). Interviewing professional (e.g., registered nurses) and non-professional (e.g., husbands caring for terminally ill spouses) caregivers, Hermanns and Mastel-Smith (2012) identified themes that caregivers associate with their role. Specifically, caregivers believe their actions are characterized by: 1) providing help to those who legitimately need it; and 2) utilizing a holistic approach. Within this second theme of holistic care, six other traits that characterize work as caregiving were identified, including dedicated time, emotional bonds between care-giver and -receiver, and the use of emotional, knowledgeable, and adaptable skills (Hermanns & Mastel-Smith, 2012).

Professional caregivers are often thought of as medical personnel such as doctors, nurses, and care aides (Ward-Griffin et al., 2005). But caregiving roles exist outside of medicine and can involve social workers, emergency responders, disaster relief personnel, counselors, and therapists (Figley, 1995; Harris, 1995; Maslach, 1982; Stamm, 2010). Non-professional, or informal, caregiving is a reality for many individuals as well, and includes supporting disabled, behaviorally challenging, and mentally or physically ill

loved ones without compensation (National Alliance for Caregiving, 2009). In familial caregiving, it has been noted that caregiving comes with many burdens and challenges, including increased psychological fatigue, perceived loneliness, loss of self-identity, and feelings of anxiety (Dice & Zoena; 2017; Jensen & Giver, 1993; Pearlin et al., 1990). More formally, the negative psychological and physiological symptoms that result from caring in either a professional or informal capacity can be referred to as compassion fatigue (Figley, 1995; Joinson, 1992; Yadollahi et al., 2016).

Components of Compassion Fatigue

Compassion fatigue is the term commonly used to describe the combined conditions of burnout and STS (Stamm, 2010). The term burnout first appeared in research literature in 1974, when Herbert Freudenberger presented an informational article on symptoms, causes, vulnerable populations, and treatments for the condition. He believed that people who are "dedicated and committed . . . [and]who are seeking to respond to the recognized needs of people" (p. 161) are most likely to experience burnout (Freudenberger, 1974). The body of literature and researchers' understanding of burnout has since grown, with it now being described as a stress response that often results from people-oriented work which creates feelings of "emotional exhaustion, depersonalization, and reduced personal accomplishment" (Maslach, 1982, p. 3).

Joinson (1992) coined compassion fatigue when writing about the caregiver stress that many nurses experience. Since then, the topic has been popularized by Figley (1995) who helped create many of the initial instruments used to assess compassion fatigue. In its early stages, the term was used interchangeably with STS, though this is no longer the case (Figley, 1995; Stamm, 2010). The two concepts are currently understood to be

different, with STS being a subcomponent of compassion fatigue (Stamm, 2010). STS is a concept that is widely studied but lacks a clear definition throughout the literature, with some calling it a form of post-traumatic stress disorder and others defining it as vicarious traumatization (Figley, 1995; Pearlman & Saakvitne, 1995; Sprang et al., 2019). The term is associated with exposure to another's trauma through direct care work (e.g., nursing or social work), and symptoms of avoidance, hyperarousal, and an inability to enjoy daily life (Bride et al., 2007; Figley & Roop, 2006).

In 2017, a panel of researchers, clinicians, and trainers all well versed in STS literature brought some clarity to trauma research by creating a unified definition of STS (Sprang et al., 2019). The conclusion was that, although STS itself is not a recognized disorder within the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition, it "is directly related to, or potentially closely parallels the structure of . . . [post-traumatic stress disorder] PTSD, that is, intrusive reexperiencing, avoidance, alterations in arousal and reactivity, alterations in cognitions and mood, and dissociation" (Sprang et al., 2017, p. 75). Working toward a unified definition is important for traumatology researchers and mental health practitioners, particularly given the confusion that has existed with treatment and diagnosis of a loosely defined condition (Sprang et al., 2017).

As researchers' understanding of compassion fatigue has evolved so, too, has the way in which it is measured. Current assessments now evaluate CS, or the pleasure one derives from their work, as it is an important component for mitigating burnout and STS (Stamm, 2002). After reviewing 23 published studies, Sacco and Copel (2018) defined CS as "the pleasure, purpose, and gratification received by professional caregivers through their contributions to the wellbeing of patients and their families," (p. 78). In

nurses, CS was found to result in feelings of joy, gratitude, optimism, personal accomplishment, and job-related fulfillment (Sacco & Copel, 2018). CS is an important concept in traumatology research, as many studies have found that it negatively correlates with burnout and STS risk (Conrad & Keller-Guenther, 2006; Kelly et al., 2015).

Importance of Compassion Fatigue Research

It is generally accepted by traumatology and occupational health experts that compassion fatigue is an occupational hazard within specific jobs involving caring for traumatized populations, such as nursing and counseling (Figley, 1995; Maslach, 1982). When an employee experiences burnout or STS, there are many negative outcomes that accompany it. Individuals have reported experiencing depression, increased anxiety, physical discomfort, frequent headaches, fatigue, guilt, and social withdrawal (Cunningham, 2003; Figley, 1995; Figley & Roop, 2006; Fruedenberger, 1974; Sabo, 2011). Additionally, when correlated with work-family spillover and marriage quality, research has shown that individuals with increased burnout and STS often report lower marital quality than their counterparts not suffering from compassion fatigue (Finzi-Dottan & Berckovitch Kormosh, 2018).

In regard to patient care, burnout and STS have been linked to decreased job performance, an increase in work-related errors, and fewer patients reporting high quality care (Schwam, 1998). Of the 6,312 registered nurses surveyed by the Canadian Nurses Association (2010), roughly 25 percent reported seeing unsafe patient practices occur as a result of fatigue. High burnout prevalence among a hospital's nursing population was also shown to decrease reported patient satisfaction (Vahey et al., 2004). From an institutional viewpoint, agencies with increased burnout and STS rates struggle to hire

and retain employees, experience an overall decrease in workforce efficiency, and have increased absenteeism among staff (Harris & Griffin, 2015; Jenkins & Warren, 2012; Vahey et al., 2004). Thus, burnout and STS have ramifications at each level of direct care, and bear consequences for clients, employees, and the employing institution.

Measuring Compassion Fatigue Risk

Burnout and STS can be measured individually or as two components that culminate in compassion fatigue. When measuring compassion fatigue overall, researchers have a wide variety of validated tools to choose from, such as the Compassion Fatigue – Short Scale (Adams et al., 2006), the Professional Quality of Life Scale (ProQOL) (Stamm, 2005, 2010), and the Compassion Fatigue Scale (Gentry et al., 2002). Nearly all of the compassion fatigue inventories that exist are revised versions of the earliest instrument, the Compassion Fatigue Self-Test (Bride et al., 2007; Figley, 1995). The most recent adaptation, and the most widely used throughout research, is the ProQOL 5 (Stamm, 2010). The ProQOL instruments stand apart from other assessments with the inclusion of a subscale measuring respondents' CS (Stamm, 2005). The ProQOL 5 is not designed for diagnosing participants with burnout or STS, but scores can help determine if participants have low, moderate, or high CS, risk of burnout, or risk of STS. For all three of the subscales, a low score is considered 22 or less, a moderate score is between 23 and 41, and a high score is 42 or above (Stamm, 2010). Cutoff scores can also be employed, but the ProQOL authors advise against this method as it has the potential to misrepresent study populations (Stamm, 2010).

Historically, construct validity of the ProQOL and its earlier forms (e.g., Compassion Fatigue Self-Test) have been examined through comparison with the

General Health Questionnaire (Goldberg & Huxley, 1992). One study distributed the ProQOL and the General Health Questionnaire to 331 hospital staff members in an attempt to distinguish a relationship between the components of compassion fatigue and general health (Yadollahi et al., 2016). The General Health Questionnaire has four categories that it assesses, including "physical dysfunction, anxiety and sleep disorders, social dysfunction, and severe depression" (p. 3), with higher scores reflective of poorer health (Yadollahi et al., 2016). The authors found that there was a significant relationship between all components, and that increased burnout or STS scores, or decreased CS, were associated with increased scores on the General Health Questionnaire (Yadollahi et al., 2016). Rossi et al. (2012) also used the General Health Questionnaire to assess psychological distress in relation to compassion fatigue and CS. Their findings showed that participants with higher distress generally had lower CS and a greater risk of both burnout and STS.

Adams et al. (2008) conducted an extensive assessment of how compassion fatigue subscales related to the General Health Questionnaire, negative life events, lifetime trauma, psychological resources (e.g., managerial support or proper job-specific knowledge), and involvement in response efforts for the September 11th attack on the World Trade Centers. Their data illustrated significant and complex interactions between nearly all of the variables. For example, they were able to assert, after separating subscales into independent measures, that burnout and STS were different constructs. Overall, burnout, STS, and psychological wellbeing (as determined by the General Health Questionnaire) all showed relationships with one another. These findings were

significant, as they not only showed that compassion fatigue is related to psychological wellbeing, but supported the notion of burnout and STS as different concepts.

Some researchers have criticized current research practices surrounding compassion fatigue in that investigators focus on assessing individual risk but ignore organizational components (Doulougerie et al., 2016; Handran, 2015; Heinemann & Heinemann, 2017). Published books on both of these topics emphasize which personality traits make people more susceptible, as well as what individuals can do to mitigate compassion fatigue once it has developed (Figley, 1995; Figley & Roop, 2006; Maslach, 1982). Doulougerie et al. (2016) pointed out that, before researchers can fully address the occupational hazards of compassion fatigue, we must take responsibility off the individual and start engaging in critical evaluations of the organizations in which they work. The Trauma-Informed Organizational Culture (TIOC) Survey was developed to address this exact gap in the literature (Handran, 2013; 2015). The TIOC contains 19 questions that assess how employees perceive organizational support, supervisory support, peer support, and trauma-informed caregiver development (e.g., training on self-care). Handran (2013) argued that these four factors can help create "trauma informed systems of care" (p. 110), encouraging CS and reducing the risk of burnout or STS. The TIOC has not been widely used, but each of its subscales show statistically significant correlations with burnout, STS, and CS as measured by the ProQOL 5 (Handran, 2013). This indicates that when the two scales are completed in unison, researchers have the ability to identify the extent to which workplace factors influence burnout, STS, and CS scores.

Causes of Burnout and STS

Within human helping fields, there are many components that have been identified as exacerbating factors for burnout and STS. These have been studied fairly extensively and are often grouped into three categories: service population, individual traits, and organizational traits (Heinemann & Heinemann, 2017; Söderfeldt et al., 1995). From existing literature, we know that, typically, burnout and STS can be influenced by the type of clients an employee is caring for, as well as the severity and recentness of client traumatization. To illustrate, nurses who frequently care for patients in extreme physical pain are at an increased risk of developing compassion fatigue, and often report feeling guilty and helpless when they cannot increase comfort (Sabo, 2011). Unsurprisingly, sexual assault victims and abused, sick, or dying children have been reported as some of the most challenging populations with which to work (Berger et al., 2015; Maytum et al., 2004; Pearlman & Saakvitne, 1995). Humanitarian aid workers that responded to conflict in India all showed symptoms of STS as a result of dealing with patients who had just lived through sexual assault, perceived threat of death, or physical violence (Shah et al., 2007). These studies accumulatively support the conclusion that the type and recentness of a client's trauma may influence the risk of burnout and STS development in caregivers.

Many authors have also aimed to determine what personality traits make some individuals more susceptible to burnout and STS. Theories have suggested that neuroticism, low emotional intelligence, emotional instability, poor coping styles, and/or a lack of investment in selfcare can all increase the risk of compassion fatigue (Chen et al., 2018; Figley, 2002; Zeidner et al., 2013). Those factors with empirical support

include coping style, loci of control, time in profession, age, and emotional stability. Unhealthy coping methods, such as solely relying on spirituality or not addressing stressors as they arise, have been correlated with a higher risk of compassion fatigue (Injeyan et al., 2011; Yu et al., 2016). Specifically, Injeyan et al. (2011) found that burnout and STS are often hazards for individuals who are more pessimistic in nature or who perceive themselves as having little control over their lives (i.e., an external loci of control). Among nurses, more years in the profession and increased age appear to result in higher rates of CS and lower risk of burnout and STS (Hunsaker et al., 2015; Kelly et al., 2015). Chen et al. (2018) found that within pediatric nurses there was a relationship between high-risk compassion fatigue scores and lower emotional stability.

The list of organizational traits that have been shown to influence compassion fatigue is extensive. Through a literature review, Söderfeldt et al. (1995) compiled a list of work-related factors that 18 studies found to positively correlate with burnout among social workers. Some of these included unclear job expectations, reduced freedom, lack of challenges, low salary, and obstacles in providing care. Among nurses, poor relations between staff, inadequate administrative support, poor supervisory support, and being overworked as a result of reduced workforce have all been shown to contribute to burnout (Hunsaker et al., 2015; Vahey et al., 2004). Maslach and Leiter (2016) asserted that these stressors interact with psychological wellbeing in the same way across nearly all helping professions. There is some evidence that organizational factors may actually have a greater influence on burnout or STS risk compared to individual traits, as significant differences can be observed within the same profession across different institutions. For example, Berger et al. (2015) found that 30 percent of pediatric nurses working in one

hospital were at a high risk of developing compassion fatigue, while Chen et al. (2018) found that pediatric nurses within their sample, overall, had high CS and were at a low risk of compassion fatigue. Chen et al. (2018) believed that the relatively low risk among their population could be explained by the supportive workplace culture that engaged in frequent bonuses, organized socializing events for employees, and provided debriefing services for staff.

Preventing Compassion Fatigue

If reversed, most of the negative organizational variables that increase compassion fatigue prevalence can become tools for prevention. For example, Vahey et al. (2004) provided empirical evidence that poor relationships between employees increased burnout, while Handran (2015) demonstrated that feeling supported by supervisors and peers was a key factor in mitigating compassion fatigue. Kelly et al. (2015) found that receiving recognition and reward influences compassion fatigue; participants who did not feel recognized by their employer had a higher risk of compassion fatigue and lower CS. Obviously, personality traits and the client population one serves are more challenging to alter, but research suggests that education can be a prevention tool in most professions (Figley, 1995; Merriman, 2015; Naturale, 2007). For example, when working with traumatized populations, establishing important boundaries has been shown to deter the development of compassion fatigue (Bourassa, 2011). Educating employees on the importance of such may aid them in creating and adhering to personal boundaries with clients (Bourassa, 2011).

Alleviating Compassion Fatigue Symptoms

Many researchers have investigated potential methods of ameliorating compassion fatigue in those individuals experiencing it. It has been hypothesized that, to combat compassion fatigue, individuals should engage in activities that recharge them, such as meditating, exercising, and pursuing hobbies (Bush, 2009; Pfifferling & Giler, 2000; Showalter, 2010). When empirically evaluated, all of these activities correlate with a decreased risk of compassion fatigue, while exercise is the only one that has been shown to directly alleviate burnout and STS (Hevezi, 2016; Hinderer et al., 2014). Hevezi (2016) administered the ProQOL 5 Scale to 15 nurses before and after their participation in a month-long meditation program. The author found that 10 minutes of meditation five times per week increased CS and decreased burnout and STS subscores. Beyond that, the literature supports that employees should work to remain cognizant of compassion fatigue symptoms and seek out peer or professional support when they begin to manifest (Lombardo & Eyre, 2011; Showalter, 2010). If an individual has the time and resources to pursue therapy sessions, guided imagery and sensory based therapy have both been noted to help ameliorate symptoms of compassion fatigue, such as anxiety or sleep issues (Harris, 1995; Kiley et al., 2018).

These recommendations are helpful, but a majority of the literature suggests that employers must change the workplace culture for there to be any significant recovery from compassion fatigue (Doulougerie et al., 2016; Musa & Hamid, 2008; Zajac et al., 2017). Educating staff on the signs and causes of burnout and STS is typically recommended as a starting point. Employees are better suited to recognize and address compassion fatigue symptoms as they arise if they are knowledgeable about them

(Figley, 1995; Flarity et al., 2013; Papa-Rodriguez et al., 2015; Pfifferline & Gilley, 2000; Tucker et al., 2017). Another recommendation consistent throughout traumatology literature is that debriefing services should be readily accessible for employees (Lombardo & Eyre, 2011; Maytum et al., 2004; McCammon & Allison, 1995; Miller et al., 2017; Papa-Rodriguez et al., 2015; Schmidt & Haglund, 2017; Schwam, 1998). Employees should not be solely responsible for seeking out therapeutic help to address their conditions and, instead, should have that made available by their employer. Beyond education and debriefing, the third most common recommendation for combatting compassion fatigue is increasing CS (Chen et al., 2018; Conrad & Kellar-Guenther, 2006; Stamm, 2010). Satisfaction can be increased by giving proper praise and reward to employees, increasing managerial support, establishing a work culture that encourages friendship among staff, and maintaining fair work distributions (Chen et al., 2018; Figley & Roop, 2006; Jasperse et al., 2013; Kelly et al., 2015).

The literature indicates that CS, burnout, and STS are all complex and interrelated conditions, which can help researchers understand field-specific occupational hazards. Together, burnout and STS result in compassion fatigue, the development of which carries consequences for individuals, patients, and management. Many recommendations exist for preventing or addressing burnout and STS in workplaces. Notably, education, debriefing services, and supportive, friendly workplace culture are the three most commonly recommended practices. To build upon current knowledge, researchers should begin exploring how burnout, STS, and CS influence those working in less conventional caregiving roles.

Compassion Fatigue and CS in Animal-Care Workers

Animal Caregivers

The individuals charged with ensuring the survival of an animal and completing daily procedures that maintain wellbeing, such as feeding and habitat cleaning, are referred to as caregivers and caretakers. There are some inherent distinctions in caring for animals compared to humans, but the same definition is applicable: caregivers are doing things for an animal that the animals cannot do themselves. Similar to human care, animal caregiving is required across many careers, such as veterinarian medicine, adoptive shelter work, animal control services, wildlife rehabilitation, zoo husbandry, and sanctuary caregiving.

Importance of Compassion Fatigue Research

Given the findings that veterinarians in the United States (U.S.) are between 2.1 to 3.5 times more likely to commit suicide than the general public, a better understanding of occupational stressors and compassion fatigue within these animal caregiving professions is greatly needed (Tomasi et al., 2019). From an animal welfare perspective, burnout and STS prevalence among caregivers likely impacts animal wellbeing, similar to how nurse burnout impacts patients' quality of care (Vahey et al., 2004). By researching this topic, traumatology experts may be able to help improve the daily lives of animal-care workers and ensure they have the tools needed to continue helping animals.

Prevalence of Compassion Fatigue

Few studies have utilized compassion fatigue instruments to evaluate animal-care personnel, which makes assigning prevalence rates challenging. Of the two identified studies that used the ProQOL in companion animal-care settings, it appears that roughly

25 percent of veterinarian and animal control personnel are at a high risk of experiencing compassion fatigue. Scotney et al. (2019) administered the ProQOL 5 to 229 participants, a majority of whom worked in the veterinary sector, and found that nearly 75 percent had average or high CS, and roughly one quarter of the population were at a high risk of burnout or STS. Hill et al. (2020) used the same instrument with 2,878 veterinarians, veterinary technicians, and animal control officers across the U.S. and found that 25.6 percent were at risk of developing compassion fatigue. The authors reported that this percentage is relatively high compared to findings for human service workers (Hill et al., 2020), but a review of the human caregiver literature shows the prevalence of compassion fatigue risk ranging from 0 to 70 percent across studies, making it challenging to discern average rates of occurrence throughout an entire profession (van Mol et al., 2015). Regardless, the results from both Scotney et al. (2019) and Hill et al. (2020) support Figley and Roop's (2006) contention that compassion fatigue is an occupational hazard among animal-care professionals that warrants further attention.

Causes and Symptoms of Compassion Fatigue

STS and burnout symptoms appear to be the same for animal and human caretakers, but the way in which these conditions evolve may differ (Figley & Roop, 2006). Similar to research findings for nurses and social workers, staffing levels, individual workload, volume of patients, organizational budgets, and the ability to provide services can influence compassion fatigue in animal-caregivers (Figley & Roop, 2006). The trauma experienced by the service population is also pertinent to the development of STS, although this process may appear different for animal-care workers (Figley & Roop, 2006). For mental health professionals, trauma transference often arises

through a client's retelling of traumatic events, whereas animal workers usually experience secondary exposure once they are made aware of previous abuse or neglect (Figley & Roop, 2006; Hill et al., 2019). Among nurses, experiencing frequent death has been noted to be an important stressor that impacts psychological wellbeing, and the same appears to hold true for animal caregivers as well. Studies have found that performing euthanasia on animals can be an especially significant stressor for employees and can result in decreased job satisfaction (Hill et al., 2019; Scotney et al., 2015). Rohlf and Bennett (2005) found that nearly half of their surveyed veterinary, shelter, and laboratory staff believed euthanasia to be one of the worst parts of their job, with 11 percent of the population reporting severe levels of stress related to euthanasia.

Non-Companion Animal Care Workers

Aside from laboratory personnel, workers that care for non-companion animals, such as wildlife, have mostly been excluded from research on compassion fatigue and CS. However, given the similarity in working issues, we could anticipate that many of the same components that contribute to burnout and STS among companion-animal staff and human caregivers also apply to these fields. Funding, workload, staff relationships, service barriers, animal abuse, and euthanasia will be elements that arise in most animal-care professions (Englefield et al., 2019; Figley & Roop, 2006). However, there is little understanding regarding occupational hazards that are specific only to wildlife and exotic animal care. Qualitative interviews conducted with avian and exotic animal veterinarians found that participants wanted to see their profession represented in research (Marino, 2018). They also noted that they encountered stressors that conventional veterinarians likely would not experience in their work. One participant illustrated this by saying:

> avian and exotic pets . . . commonly hide their illnesses until they no longer can anymore, and that is when a client first notices a problem. Due to this, our clients can sometimes have very unrealistic expectations for their very compromised pets. In other cases, the complete opposite can happen, where a client doesn't consider an 'exotic pet' as worthy of diagnostic and medical care as a more traditional pet (Marino, 2018, p. 346-347).

To the best of my knowledge, only two studies that address compassion fatigue among wildlife and exotic animal caregivers working outside of laboratories have been published. The first focused on the emotional and economic costs Australian wildlife rehabilitators incurred as part of their work (Englefield et al., 2018). Those authors estimated that each year roughly 50,000 orphaned marsupials (e.g., kangaroos and koalas) received care, most of which was provided on a volunteer basis (Englefield et al., 2018). Rehabilitating one orphan was estimated to take approximately 1,000 hours of caregiving and cost $2,000 Australian dollars (Englefield et al., 2018). Depending on the circumstances, these investments could create financial strain and a demanding workload for caregivers, which are factors known to aggravate burnout risk (Söderfeldt et al., 1995; Vahey et al., 2004). Through their literature review, Englefield et al. (2018) identified eight causes of grief that the researchers believed rehabilitators would be susceptible to, such as providing end of life care or losing a child. Knowing that terminal children are a population that can increase compassion fatigue risk in nurses, the authors' conclusion that wildlife rehabilitators may be susceptible to grief and compassion fatigue as a result of providing end of life care and/or losing a child is feasible (Berger et al., 2015; Englefield et al., 2018; Maytum et al., 2004).

Yueng et al. (2017) used the ProQOL 5 to assess compassion fatigue among wildlife rehabilitators in New Zealand. Those participants were found to have high CS, with only 20 percent of the sample yielding low scores. The authors reported that 20 percent of respondents were at a high risk for both burnout and STS, 63 percent at a moderate risk for STS, and 50 percent at a moderate risk for burnout. The results indicated that wildlife rehabilitators experienced relatively high CS with a low prevalence of compassion fatigue but showed worrisome risk for burnout and STS. The authors refrained from using these findings to generalize compassion fatigue rates within wildlife carers, given that their sample was small (i.e., 30 individuals) and consisted mostly of white women under the age of 29 (Yueng et al., 2017).

Preventing Compassion Fatigue

Regardless of the species being cared for, most recommendations for preventing and relieving compassion fatigue remain constant across animal and human care professions. Education is strongly emphasized as an appropriate intervention, as is peer and managerial support, grief and stress support services, and programs directed at increasing CS (Figley & Roop, 2006; Lloyd & Campion, 2017; Rank et al., 2009; Reese, 2019; Scotney et al., 2015). Employers should strive to reduce unnecessary workplace stress (i.e., giving appropriate breaks and not exceeding 40-hour work weeks) and acknowledge the emotional stressors that can result from euthanasia and exposure to animal cruelty (Hill et al., 2019; Lloyd & Campion, 2017; Reeve et al., 2004).

Polachek and Wallace (2018) promoted employees developing bonds with the animals in their care to increase satisfaction, though this could magnify compassion fatigue within some professions. For example, Halpern-Lewis (1996) asserted that

laboratory personnel should avoid forming overly strong bonds, as they can interfere with job duties and result in grief following euthanasia. Arluke's (1991) case study of an adoption shelter showed that it is possible, however, to create workplace cultures that mediate euthanasia-related stress while simultaneously promoting animal-employee bonds. Through interviews, the author discovered that easing participants into the task of euthanasia and allowing them to discuss and process the morality of it with coworkers generally improved their views on euthanasia. These techniques allowed employees the space and time needed to negotiate the idea that they can love and care for animals while still engaging in euthanasia. It is likely that similar to human care, different professions and organizations will not all benefit from the same prevention and intervention strategies, and employers should work to identify what will work best for their staff (Bride et al., 2007).

Future Research

The increased interest in veterinarian compassion fatigue is promising but there is still much to be learned about animal-care work. Niche fields that involve working with non-companion animals should be populations of focus in future research. Some exploratory studies have shown that rehabilitators and avian veterinarians may face challenges specific to their work that could influence compassion fatigue prevalence, but these components have yet to be extensively studied. Animal sanctuary employees or individuals who care for non-human primates outside of laboratory environments have yet to be represented in the literature. Given the relatively recent rise in sanctuaries within North America, and non-human primate sanctuaries specifically, it is surprising that no studies have elected to focus on CS and compassion fatigue within this group.

Captive Non-Human Primates

The term primate will be used to refer to all individuals within the Primate order other than humans (*Homo homo sapien*) from this point onward. Primates include New World Monkeys (*Platyyrrhini*), Old World monkeys (*Cercopithecoidea*), lemurs, lorises, and galagos (*Strepsirrhini*), tarsiers (*Tarsiiformes*), large bodied apes (*Pongidae*), and smaller bodied apes (*Hylobatidae*; Fleagle, 2011). Old World monkeys, lemurs, lorises, galagos, tarsiers, great apes, and small bodied apes are endemic to Africa and Asia; New World monkeys to Central and South America (Fleagle, 2013; O'Brien, Kinnaird, Nurchayo, Iqbal, & Rusmanto, 2004). Humans have introduced primates to other continents as well, including Europe and North America (Wolfe & Peters, 1987; Modolo et al., 2005). In order to explore how caregivers and their resident primates may influence one another it is useful to discuss captive primate history, particularly to the extent that compassion fatigue may be exacerbated through working with traumatized primates, and how compassion fatigue symptoms could negatively impact the animals under care.

Caregiver Effect and Interspecies Relationships

Pomerantz (2017) uses the term "caretaker effect" (p. 1) to describe all influences that caregivers have over the animals with whom they work. These can be direct, such as determining daily activities and diet of the animals, or indirect (e.g., the scents emitted during cleaning). Captive primates are living in environments built and mostly controlled by humans. Primates in the wild are able to make a majority of important decisions on their own; they can run when they are scared, they can increase or decrease their feeding range, and they can choose what foods to eat out of what is available to them (Morgan & Tromborg, 2006; Pomerantz, 2017). Even sanctuaries that strive for high autonomy

within North America are not able to give these same freedoms to their residents (Roffman et al., 2019). Caregivers and enclosure space determine the majority of captive animal lives, including the size of their group, those conspecifics with whom they are in frequent contact, the foods they eat, and how those foods are served (Morgan & Tromborg, 2006; Pomerantz, 2017).

Previous findings have shown that caretaker and primate relationships may influence employee happiness and animal behavior in laboratory settings. Chang and Hart (2002) administered surveys to 16 caregivers and veterinarians employed at university laboratories and found that having positive interactions with animals was extremely rewarding for all of the staff. Waitt and Buchanan-Smith (2002) studied interactions between six groups of stump-tailed macaques (*Macaca arctoides*) and their caregivers over a 14-week period. Their findings revealed that macaques who regularly had positive interactions with caretakers appeared less distressed when associating with one another and engaged in less agonistic behavior. Those macaques interacted more frequently with and showed greater willingness to approach and accept food from their caretakers. The macaques labeled as unfriendly displayed higher rates of disturbance when caregivers were present, rarely initiated interactions, and were more likely to display aggressive behavior. The authors noted that, although the origin of unfriendly behavior was unknown, the main implication of their finding was that positive relationships between caregivers and primates can decrease animals' stress. They further recommended that caretakers attempt to dispel unfriendly macaques' fears by engaging in positive reinforcement training. The authors believed that, by improving the animal-human

relationship, employees could increase their job satisfaction and reduce primates' stress levels.

These same principles also appear to apply in captive zoo settings. Hosey and Melfi (2012) administered surveys to 130 zoo personnel evaluating their relationships with the animals in their facility. Nearly 80 percent of respondents reported having bonds with at least one of the captive animals in their care. Respondents believed that it was easier, safer, and more enjoyable to handle animals that they had bonds with compared to those with whom they did not. Although the animals' behaviors were not observed for this research, caregivers believed that the animals experienced the same benefits during their interactions. For example, many participants reported that animals appeared calmer and enjoyed interacting more with bonded zookeepers. The authors suggested that their findings could have large implications for job satisfaction and captive animal comfort.

Unfortunately, the impact of animal-human relationships on job satisfaction have not yet been explored in a sanctuary setting, but it is likely that the same principles will apply with positive interactions increasing caregiver satisfaction and the quality of care. Some compassion fatigue symptoms, such as perceived inability to fulfill work duties and withdrawal from adverse situations, could endanger caregiver and resident relationships. From the findings discussed above, positive human-animal relationships and interactions can bring many benefits to all involved parties and ensuring they persist is an important component of both animal welfare and CS.

North American Captive Primates

Within North America there are very few free-ranging primates, and the majority of captive primates are cared for as private pets or in captive settings at zoos,

conservation centers, laboratories, or sanctuaries (ChimpCARE, 2018; Chomel et al., 2007; North American Primate Sanctuary Alliance [NAPSA], 2020.; U.S. Department of Agriculture [USDA], 2018). The need for primate sanctuaries within the U.S. began rising in 2012, when the National Institutes of Health (2012) announced that they would retire all government owned chimpanzees (*Pan troglodytes*) living at the New Iberia Research Center to sanctuary. In June of 2013, the National Institutes of Health (2013) announced that it would further reduce the use of chimpanzees in biomedical research, retaining only 50 individuals that could be used for future research which adhered to strict principles and guidelines set forth by the Institute of Medicine. Then, in 2015, in response to a U.S. Fish and Wildlife Service rule requiring labs to apply for a permit to conduct invasive research on chimpanzees due to the species being reclassified as endangered, the National Institutes of Health announced a total end to funding biomedical research on chimpanzees and that all federally-owned chimpanzees would be eligible for retirement to sanctuaries (Collins, 2015; U.S. Fish and Wildlife Service, 2015). Since the U.S. Fish and Wildlife Service enacted this policy, zero labs located within the U.S. have applied for permits to conduct invasive research on chimpanzees, which "suggests that all biomedical research on chimps has stopped — or is about to stop — and it's unclear whether the work will ever start up again" (Grimm, 2015, n.p.). Currently, all of the great ape species (i.e., chimpanzee, bonobo, gorilla, and orangutan) are listed as endangered by the U.S. Fish and Wildlife Service (Conlee, 2007; U.S. Fish and Wildlife Service, n.d.).

Other primate species (e.g., *Macaca* species) that are still permitted for use in research are eligible for retirement as well, dependent on sanctuary space availability

(McAndrews & Helms-Tillery, 2016). Historically, chimpanzees were some of the most desirable subjects for studying infectious diseases such as hepatitis C, human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS; Conlee & Boysen, 2005). This is credited to the fact that chimpanzees are similar enough to humans to be an appropriate model, but dissimilar enough for the experimentation to be considered ethical (Bradshaw et al., 2008). Monkeys that are still allowed for use in research are included in a wide array of studies, with the top three research areas being HIV/AIDS, neuroscience, and viral infectious diseases other than HIV (National Institute of Health [NIH], 2018). It is impossible to know the details of each primate's personal history in biomedical research, but Conlee and Boysen (2005) highlight that their use in HIV/AIDS and hepatitis C research often involves distressing procedures. For example, some studies with chimpanzees subjected the primates to "major surgery, liver biopsies, . . . frequent blood sampling, and restraint" (Conlee & Boysen, 2005, p. 125).

It is believed that the personal experiences of most laboratory-used primates result in lifelong alterations to behavior and social abilities (Bradshaw et al., 2008; Ferdowsian et al., 2011). Primates used in research can be exposed to social deprivation and atypical rearing as well, which have been linked to species abnormal behavior and increased stress later in life (Conlee & Boysen, 2005; Ferdowsian et al., 2011; Freeman & Ross, 2014). These experiences occur for many primates housed outside of laboratories too, such as pet and performer monkeys. Figley and Roop (2006) emphasized that awareness of an animal's previous suffering contributes to STS. With that in mind, caregivers who know of primates' past experiences in captivity, and observe the aftermath of such, may be vulnerable to STS.

African and Asian Captive Primates

Similar to North American sanctuaries, the animals that are being cared for in Asian and African facilities have also been exposed to stress earlier in their lives. The Pan African Sanctuary Alliance is a network of 23 sanctuaries and animal centers within Africa that work to protect primate populations in their native environments (Pan African Sanctuary Alliance, n.d.). Some sanctuaries, such as the Limbe Wildlife Centre and the Sweetwaters Chimpanzee Sanctuary, offer permanent housing and protection, while others, like the Chimpanzee Conservation Center, focus on rehabilitation and release (Limbe Wildlife Centre, 2020; Ol Pejeta Conservancy, 2019; Project Primates, 2019). Bonobos, chimpanzees, gorillas, baboons, mangabeys, mandrills, guenons, vervet monkeys, colobus monkeys, and talapoins are some of the many species that can be found throughout Pan African Sanctuary Alliance centers. The threats that primates face in their native environments vary by region and species, but nearly all of the primates housed at these sanctuaries have been victims of human exploitation or natural disaster (Pan African Sanctuary Alliance, n.d.). By visiting the different sanctuary websites, one can gain an understanding of the conditions many primates experience prior to rescue. To illustrate, the Limbe Wildlife Center (2020) writes:

> Many of the animals arrive as orphans after their mothers are killed for bushmeat. Others that were kept as pets come to us after years of suffering, abuse, and inadequate care. . . they are suffering from many ailments . . . [that] can include malnourishment, dehydration, parasite infestation, emotional trauma, and sometimes wounds from shotgun pellets, snares, ropes, machetes or repeated abuse (n.p.).

Within Asian facilities, macaques, orangutans, and slow lorises are some of the main species that receive care (International Animal Rescue, n.d.). The long-term goal of these organizations is to rehabilitate, socialize, and release the primates that they rescue, though this is not always feasible. For example, many slow lorises confiscated from the exotic pet trade have had their teeth removed, which greatly diminishes their ability to defend themselves and survive in wild habitats. In these cases, the animals are offered safety and retirement for the remainder of their lives (International Animal Rescue, n.d.). With the variety of species housed throughout African and Asian sanctuaries, it is likely that workplace stressors will vary. Similar to primates in North America, studies have shown that many primates in African sanctuaries have increased stress, inhibited social skills, and atypical behaviors (Ferdowsian et al., 2011; Lopresti-Goodman et al., 2013).

Atypical Behaviors and Stress

The relationship between atypical environment and developmental abnormalities has been validated through various study designs. Some of the techniques researchers have employed involve measuring stress hormone levels, observing frequency and rate of atypical behaviors, examining social networks, or combining one or more techniques. Glucocorticoid levels have been identified as a reliable way to measure a primate's stress. When mammals are exposed to a stressor, they will engage in "a stress response, which is a suite of physiological and behavioral responses that serve to neutralize the effects . . . and to reestablish homeostasis" (Reeder & Kramer, 2005, p. 226). During this process, the hypothalamic-pituitary-adrenal axis becomes activated and stimulates the release of glucocorticoid hormones, such as cortisol in humans and primates (Reeder & Kramer, 2005). Levels of cortisol can be accurately measured through blood, plasma, saliva, urine,

feces, or hair samples (Novak et al., 2013). Testing hair yields reliable information on free floating cortisol levels within primates and is a technique regularly employed (Davenport et al., 2006; Novak et al., 2013).

Jacobson et al. (2017) utilized hair sampling techniques to compare cortisol levels between chimpanzees with varying developmental histories. The Chimpanzee-Human Interaction index, developed by Freeman and Ross (2014), allowed researchers to determine the amount of human exposure each chimpanzee had had throughout their life based on personal records. Their analysis showed that chimpanzees with greater rates of human exposure had higher concentrations of cortisol in their hair. The samples taken from chimpanzees who had more conspecific interaction throughout their lives contrastingly contained lower levels of cortisol, indicating that primates with atypical developmental histories experienced greater stress levels later in life.

Freeman and Ross (2014) also used the Chimpanzee-Human Interaction index to assess the impact of atypical rearing on behavior. They computed index ratings and gathered observational data for 60 mixed-gender chimpanzees housed in accredited sanctuaries and zoos throughout North America. Their behavioral data were grouped into six categories including: "social, . . . sexual, agonism, solitary, inactivity, and abnormal," (p. 5) that helped researchers assess activity budgets for each primate. Their findings revealed that primates with the most human interaction engaged in fewer grooming and social sex behaviors, suggesting a relationship between species-atypical environments and social skill deficits. Kalcher-Sommersguter et al. (2015) reported similar results after comparing the social grooming networks of chimpanzees who were born in zoos and raised by their mothers with those who were reared in laboratories and mother-deprived.

The chimpanzees who had been caught in the wild and deprived of mother rearing earlier in their life had lower grooming associations than their non-deprived counterparts.

Abnormal or atypical behaviors in chimpanzees are defined as "behaviors that are species-atypical, occur exclusively or at much higher frequencies among animals reared in grossly restricted environments, and are similar to behavior patterns exhibited by mentally deficient humans" (Baumeister & Forehand, as cited in Walsh et al., 1982). Walsh et al. (1982) created an ethogram of 27 abnormal behaviors after gathering 100 hours of observational data on chimpanzees housed in a laboratory. Some of the behaviors included in their ethogram were self-mutilating, eye-poking, eating feces, smearing feces, rocking, and drinking urine. Lopresti-Goodman et al. (2013) used this ethogram in their case study of two chimpanzees rescued from the exotic pet trade. Through interviews with caregivers, the authors established biographical details on the animals who been taken from their mothers, deprived of intraspecies contact, and held in businesses to attract customers. Observational data showed that both animals engaged in abnormal behavior even decades after having been moved to sanctuary, illustrating the long-lasting behavioral effects of social isolation and mother-deprivation on great apes living in captivity.

The studies noted above have all chosen chimpanzees as subjects, but earlier laboratory research indicates that monkey species are equally vulnerable to such effects of early deprivation and stress (Dienske & Griffin, 1978; Harlow et al., 1965; Harlow & Zimmermann, 1959). The overwhelming body of evidence presented here supports the hypothesis that abnormal rearing practices, social isolation, and exposure to human-centered environments has the potential to hinder social abilities in primates and result in

abnormal behavior development. Lopresti-Goodman et al.'s (2013) interviewing of caregivers further supports the idea that caregivers will notice and be cognizant of such abnormal behavior patterns among the primates in their care.

Study Goals and Hypotheses

The current study had four goals. The first was to assess burnout, STS, and CS among individuals who worked with primates at both accredited and non-accredited sanctuaries within North America, Africa, or Asia. The second purpose was to evaluate workplace culture in these settings, gain a better understanding of organizational traits common in primate sanctuaries, and explore how those organizational traits related to compassion fatigue and CS. A third goal was to evaluate the Observed Primate Behavior Questionnaire as a potential tool for measuring different types of behavior. The final intent was to explore how work and demographic variables influenced burnout, STS, and CS.

This study evaluated five hypotheses: 1) overall risk of burnout and STS would be similar to other non-companion animal worker studies, with roughly 25 percent of participant scores reflecting high risk for burnout and STS; 2) workplace support, as determined by the TIOC, would predict burnout, STS, and CS; 3) demographic and work characteristics, such as continent of residence, gender, age, and years in profession would influence compassion fatigue components; 4) qualitative data would provide additional information about stressors and rewards specific to primate sanctuary personnel; and 5) the Observed Primate Behavior Questionnaire would allow us to distinguish the rate at which caregivers witness different types of behavior.

CHAPTER III

METHOD

Participants

Individuals who volunteered, interned, or worked with primates in a sanctuary or wildlife rehabilitation center were recruited. Recruitment was achieved through the dissemination of a survey invitation email (see Appendix A). Directors and/or communication directors of the North American Primate Sanctuary Alliance, the Global Federation of Animal Sanctuaries, and the Pan African Sanctuary Alliance were asked to forward the email invitation to member sanctuaries that house primates. Sanctuaries accredited through the European Alliance of Rescue Centres and Sanctuaries were contacted individually at the direction of the accrediting agency's director. For non-accredited sanctuaries, invitation emails were sent to each facility directly for dissemination.

Eligible participants were proficient in English, French, or Spanish and at least 18 years old. Before entering the online survey administered via Qualtrics, participants were asked to confirm that they were an active volunteer, intern, or paid employee at a sanctuary. To incentivize study participation, respondents were given the opportunity to enter an anonymous raffle for one of six 50-dollar gift cards. Demographic information was collected for 50 participants who ranged in age from 21 to 70 years old (to see demographic question items, refer to Appendix B). A majority of subjects were female (n = 41), proficient in English (n = 44), and living in North America (n = 28). Because some participants only completed certain portions of the survey, sample size varied for

demographic and work characteristic information. See Tables 1 and 2 for more detailed demographic and work characteristic information.

Table 1

Self-Reported Demographic Characteristics of Participants for the Full Sample (n = 50)

Demographic characteristic	*n*	%
Survey language		
English	44	88
Spanish	5	10
French	1	2
Gender		
Female	41	82
Male	9	18
Continent		
Africa	12	24
Europe	10	20
North America	28	56

Materials

ProQOL 5 Scale

The ProQOL 5 (Stamm, 2010) is a 30-item inventory that measures the negative and positive ways professional helping affects respondents. The inventory is comprised of three 10-item subscales that measure CS, risk of burnout, and risk of STS. Respondents are directed to "consider each of the following questions about you and your current work situation. Select the number that honestly reflects how frequently you experienced these things in the *last 30 days,"* with responses ranging on a five-point Likert scale from 1 (*never*) to 5 (*very often*). Each subscale has a total raw score ranging between 10 and 50, with five of the burnout items being reverse-scored.

Table 2

Workplace Characteristics of Participants (n = 41 - 50)

Workplace characteristic	*n*	%
Workplace role		
Employee	38	76
Volunteer	8	16
Intern	1	2
Other	3	6
Career length (in years)		
<1	4	8
1-5	24	48
5-10	11	22
10-15	4	8
>15	7	14
Workload (in hours/week)		
<10	11	22
10-20	7	14
20-30	8	16
30-40	17	34
>40	7	14
Sanctuary accreditation		
Accredited	37	90.2
Non-accredited	4	9.8

A high score on the CS subscale indicates that the respondent derives a great deal of pleasure from their work. A participant who is considered high risk for developing burnout or STS would have an accumulatively high score in that respective subscale. According to Stamm (2010), raw subscale scores are most suitable for statistical analysis, but standardized scores are preferred for inter-study comparison. To standardize scores, *t* scores were calculated for each participant. Missing response values were first identified

and replaced with subscale averages of the entire sample. CS, burnout, and STS scores were then summed for each respondent. Per Stamm's (2010) instructions, raw scores were converted to Z-scores through the following equation, $Z = \frac{x-\mu}{\sigma}$ (note: μ = sample mean; σ = sample standard deviation). Z-scores were then computed into *t* scores, with the mean set as 50 and the standard deviation as 10 (i.e., $t = Z(10) + 50$). The cut-off points provided by Stamm (2010) for low (i.e., 10-22), moderate (i.e., 23-41), and high (i.e., 43-50) levels of CS, burnout risk, and STS risk were converted to *t* scores through the same process.

Available in English, French, and Spanish, the ProQOL 5 is free to use with appropriate authorship acknowledgement. Previous research suggests that the ProQOL 5 is suitable to use, and maintains the same construct validity, in cross-cultural samples (for an example, see Galiana et al., 2017). Due to the nature of the population that participants cared for, some changes were required for the current sample. Permission was granted by the ProQOL office to alter wording. The words "person," "people," and "someone" were changed in some items to better reflect care being provided to primates, and the terms "help" and "helper" were replaced with "care," "caregiver," or "caregiving." For example, item 2 was reworded from "I am preoccupied with more than one person I help," to "I am preoccupied with more than one primate I care for." See Appendix C for a copy of the modified ProQOL 5.

The ProQOL 5 is the most widely used instrument for measuring compassion fatigue and has been utilized in over 600 published studies (ProQOL.org, 2016). Validity has been measured across 100 studies and indicate that the CS, burnout, and STS subscales showed inter-item reliability (Stamm, 2010). Some of the items in the subscales

overlap but are still considered to be independent measures. Items measuring CS, burnout, and STS show high inter-item reliability (Cronbach's alphas of .88, .75, and .81, respectively; Stamm, 2010). The ProQOL Office has not validated the instrument among animal-care worker participants, but independent researchers have found it to be reliable for similar populations (Hill et al., 2019; Yueng et al., 2017). Within the current sample, Cronbach's alphas were .92 for the CS subscale, .75 for the burnout subscale, and .84 for the STS subscale, suggesting that altering item-wording did not impact scale reliability.

TIOC Survey

With author permission, 19 items from the TIOC (Handran, 2013) were used to measure workplace culture and perceived support (see Appendix D). The instrument contains the following subscales: supervisory support (six items with a score range of 6-30), peer support (five items with a score range of 5-25), trauma-informed caregiver development (three items with a score range of 3-15), and organizational support (five items with a score range of 5- 25). Respondents were directed to "please rate the following statements," on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). If employees perceive high support within one of the categories being measured their score within that subscale should be high. For example, a participant who believes they have an extremely supportive manager would most likely "agree" or "strongly agree" with statements related to such, yielding a score between 24 and 30 for that subscale. A participant who believes they have little to no support and "disagrees" or "strongly disagrees" with all statements would have a score between 6 and 12.

In its initial form, the TIOC contained 11 more questions and two additional subscales for measuring perceived emotional and physical safety. The validity of this

inventory across different cultures and in different translations has not yet been assessed. Handran (2013) evaluated validity of the TIOC for use within the U.S. by analyzing correlations between each of its subscales and those of the ProQOL 5. Significant relationships were found to exist between all of the TIOC subscales and scores for CS, risk of burnout, and risk of STS on the ProQOL 5 (Handran, 2013). Handran (2013) reported that the revised 19-item instrument had an overall internal consistency of α = .87, with the supervisory support, peer support, organizational support, and trauma-informed caregiver development subscales having Cronbach's alphas of .88, .82, .90, and .82, respectively. The current analysis yielded lower, but acceptable, Cronbach's values for supervisory support (α = .76), peer support (α = .84), organizational support (α = .83), and trauma-informed caregiver development (α = .62) subscales. There was an overall consistency of α = .83 for the entire scale. Participant subscale scores were averaged prior to correlational and inferential statistical analyses in order to yield an overall TIOC score.

Observed Primate Behavior Questionnaire

Participants were presented with 15 types of primate behaviors and asked to rate how frequently they had observed each of the behaviors on a five-point Likert scale ranging from 1 (*never*) to 5 (*very often*). Behaviors were compiled by Freeman and Ross (2014) based on an ethogram Ross et al. (2011) had previously created for the Lincoln Park Zoo. Some of the wording used by Freeman and Ross (2014) was altered to increase readability and remove potential negative associations (e.g., the word "agonistic" was changed to "competitive"). The intent of this measure was not to assess the actual frequency of behaviors, but rather to evaluate how often participants believed they

observed them (see Appendix E for a copy of the Observed Primate Behavior Questionnaire).

The questionnaire was originally designed to assess five categories of behavior, including social, solitary, abnormal, agonistic, and sexual behaviors (see Table 3 for the original, predicted groupings of behavioral items). If this assumption had been correct, high scores would have been indicative of participants seeing a group of behaviors frequently (e.g., a summed score of 15 for the three social behavior questions would have been interpreted as the participant seeing all of the listed social behaviors multiple times per day). After a principal component analysis, using Promax rotation, loaded all items onto a single factor it was determined that the predicted model was inaccurate. As such, the entire scale was treated as a measurement of one construct ($\alpha = .83$).

Pearson's *r* correlation coefficients were used to determine which behavior-specific items correlated with one another. Forty-one positive correlations were found. The abundance of inter-item relationships across Freeman and Ross's (2014) behavioral categories suggests that, in general, if one type of behavior is observed regularly, the other types will be as well. To illustrate, observed play between two or more primates (social behavior) correlated with behaviors from all other categories, including self-grooming (solitary behavior; $r[42] = .41$, $p < .01$), coprophagy and handling feces (abnormal behavior; $r[41] = .35$, $p < .05$), competitive contact (agonistic behavior; $r(42) = 0.36$, $p = .02$), and masturbation (sexual behavior; $r[42] = .34$, $p < .05$). Item ratings provided by participants were averaged prior to correlational and inferential statistical analyses in order to yield an overall Observed Primate Behavior Questionnaire score.

Work-Related Questions

Participants were asked two qualitative and four quantitative questions related to their work with primates (see Appendix F). Previous studies have shown that time spent in profession, age, and percentage of working hours that involve direct care can influence CS and compassion fatigue risk in human caregivers (Berger et al., 2015; Handran, 2015; Hunsaker et al., 2015; Kelly et al., 2015; Rossi et al., 2012).

Table 3

Predicted Subscales of the Observed Primate Behavior Questionnaire

Subscale	Behavior Items	Possible Score Range
Social Behavior	Play between 2 or more primates Social grooming Positive interactions with humans	3-15
Solitary Behavior	Self-grooming Solitary play Resting or walking around enclosure Fixed gaze	4-20
Abnormal Behavior	Handling, eating, or manipulating feces Hair pulling Repetitive body or hand movements (e.g., rocking)	3-15
Agonistic Behavior	Competitive displays (e.g., charging) Competitive contact (e.g., biting, wrestling) Submission	3-15
Sexual Behavior	Social sex Masturbation	2-10

To assess how these factors influenced primate caregivers, survey respondents were asked to report how long they had worked with primates and how many hours per week involved direct care of primates (e.g., feeding, interacting with, monitoring, or cleaning up after them). Age responses were captured through the demographic questions and not repeated in this section. Participants were also asked if they were a volunteer, intern, or paid staff member, and what levels of accreditation or membership their employing organization had. The last two items in this section were free-response questions about the most rewarding and challenging parts of working with primates.

A thematic content analysis of the two free-response questions, "What is the most rewarding part of your work?" and "What is the most challenging part of your work?", was completed by two raters. Prior to coding, raters collaborated in identifying seven major recurring themes for work-reward responses and eight for work-challenge responses. Following this, raters independently coded for the presence of each theme, and had initial agreement rates of 87.2 percent and 79.5 percent for reward and challenge items, respectively. Code discrepancies were discussed by both raters until a final agreement rate of 100 percent was reached.

Procedures

Participants accessed the Qualtrics survey through the invitation email. Individuals were asked to provide informed consent, confirm their status as a legal adult, and attest to working with captive primates before entering the survey. If a respondent did not fulfill these requirements they were directed to the end of the survey. Eligible participants completed demographic questions, non-agency related work questions (e.g., career length), the ProQOL 5, the TIOC, the Observed Primate Behavior Questionnaire,

and the remaining work-related questions (e.g., agency accreditation) in that set order. Participants were given the option to complete a separate survey to enter the incentive raffle. Following the end of the survey, participants viewed a debriefing screen. Each question throughout the survey was optional and could be skipped. All study procedures were approved by Central Washington University's Human Subjects Review Council (study number 2020-082).

Statistical Analysis

Once selected items in the ProQOL 5 and TIOC were reverse-scored, the following information was available for each participant: 1) average scores for each of the three ProQOL subscales (i.e., CS, burnout, and STS); 2) average scores for the entire TIOC; 3) average scores for each of the four TIOC subscales (i.e, supervisory support, peer support, organizational support, and trauma-informed caregiver development); 4) individual scores for each of the Observed Primate Behavior Questionnaire items; 5) an average score for the entire Observed Primate Behavior Questionnaire; 6) employee information; 7) demographic information; and 8) qualitative answers related to challenges and benefits of captive primate caregiving. Following initial correlational analysis, continent of residence data were transformed from multi-categorical to dichotomous categorical data, with new groups consisting of either "Africa," or "North America or Europe." Additionally, after missing ProQOL responses were identified and replaced with average item values from the appropriate subscale, each participant's scores were standardized and converted to *t* scores. See Table 4 for a list of statistical analyses that were utilized to evaluate each of the five study hypotheses.

Table 4

Study Hypotheses and Statistical Analyses

Study Hypothesis	Statistical Analyses
1. Overall risk of burnout and STS would be similar to other non-companion animal worker studies, with roughly 25 percent of participant scores reflecting high risk of burnout and STS	Z-score and *t* score conversion
2. Workplace support, as determined by the TIOC, would predict burnout, STS, and CS	Pearson's *r*; multiple regression
3. Demographic and work characteristics, such as continent of residence, gender, age, and years in profession would influence compassion fatigue components	Pearson's *r*; multiple regression
4. Qualitative data would provide additional information about stressors and rewards specific to primate sanctuary personnel	Thematic content analysis; Pearson's *r*
5. The Observed Primate Behavior Questionnaire would allow us to distinguish the rate at which caregivers witness different types of behavior	Principle component analysis; Cronbach's alpha; Pearson's *r*

CHAPTER IV

RESULTS

Descriptive Statistics

Of the 50 participants, 39 completed all survey components, including accreditation and qualitative questions; two completed all survey components except for the qualitative questions; three completed the ProQOL 5, the TIOC, the Observed Primate Behavior Questionnaire and demographics only; two completed the ProQOL 5 and demographics only; and four completed demographic questions only. All participant data were retained for analyses, resulting in different *n*-values across analyses (*n*-value range: 39-50). To compare the current sample's ProQOL subscale (i.e., CS, burnout, and STS) scores to similar research, I utilized standardized data. Evaluating the standardized *t* -scores, 97.8% of participants had moderate or high CS, 0% had high risk of burnout, and only 2.2% showed high risk of STS. More detailed information for the current study's ProQOL level distribution, and how the current values compare to similar research can be found in Tables 5 and 6 (Scotney et al., 2019; Yueng et al., 2017). Scores between one and five were possible for each of the TIOC subscales. Sample means were computed for organizational support (M = 4.1 SD = 0.7), supervisory support (M = 4.0, SD = 0.6), peer support (M = 3.7, SD = 0.7), and trauma-informed caregiver development (M = 3.0, SD = 0.8). Participants' overall TIOC score had a mean of 3.7 and a standard deviation of 0.5.

Given that the Observed Primate Behavior Questionnaire did not contain subscales as predicted, descriptive statistics for individual items were computed. Notably, resting or walking, social grooming, social play, and social human-primate interaction behaviors had the greatest reported observation means. Hair-pulling, fecal handling, and

masturbation behaviors had the lowest reported observations throughout the sample. Table 7 presents mean, standard deviation, and answer ranges for each of the Observed Primate Behavior Questionnaire items.

Table 5

CS Level Frequencies Between Studies

Study	Sample	Low *n* (%)	Moderate *n* (%)	High *n* (%)
Current	46 primate caretakers	1 (2.2)	16 (34.8)	29 (63.0)
Scotney et al. (2019)	229 animal-care workers	59 (25.8)	109 (47.6)	61 (26.6)
Yueng et al. (2017)	30 New Zealand wildlife rehabilitators	6 (20)	14 (47)	10 (33)

Note. All studies used in this comparison followed the same *t* score standardization procedures and used the same cut-scores provided by Stamm (2010).

[a] Percentage values for this row are reported as they appeared in the original source, without decimal places.

Correlational Analyses

Potential relationships among personal characteristics (i.e., demographic and work-related variables) and ProQOL or TIOC subscale scores were explored through Pearson's *r* correlational coefficients after assumptions of linearity were evaluated via visual inspection of scatterplots. Respondents who lived in Europe or North America (dichotomously coded as 2), compared to Africa (dichotomously coded as 1), had higher CS, $r(44) = .30$, $p < .05$, lower burnout, $r(44) = -.56$, $p < .001$, and lower STS, $r(44) = -.42$, $p < .005$. Respondents living in North America or Europe also had higher perceived

peer support, $r(42) = .31$, $p < .05$, as measured by the TIOC. A more detailed comparison of subscale scores between African and non-African residing participants can be found in Table 8. As career length increased, so too did the ProQOL's burnout scores, $r(44) = .32$, $p < .05$, and STS scores, $r(44) = .42$, $p < .005$. Women (dichotomously coded as 1; $M = 4.3$, $SD = 0.5$), had higher CS scores, $r(44) = -.5$, $p < .001$, compared to men (dichotomously coded as 2; $M = 3.6$, $SD = 0.8$). Older respondents had higher overall TIOC scores, $r(42) = .34$, $p < .05$.

Table 6

Burnout and STS Level Frequencies Between Studies

Study	Sample	Burnout			STS		
		Low *n* (%)	Mod *n* (%)	High *n* (%)	Low *n* (%)	Mod *n* (%)	High *n* (%)
Current	46 primate caretakers	17 (37.0)	29 (63.0)	0 (0.0)	22 (47.8)	23 (50.0)	1 (2.2)
Scotney et al. (2019)	229 animal-care workers	54 (23.6)	126 (55)	49 (21.4)	63 (27.5)	107 (46.7)	59 (25.8)
Yueng et al. (2017)	30 New Zealand wildlife rehabilitators	9 (30)	15 (50)	6 (20)	5 (17)	19 (63)	6 (20)

Note. All studies used in this comparison followed the same *t* score standardization procedures and used the same cut-scores provided by Stamm (2010). Mod = moderate.

[a] Percentage values for this row are reported as they appeared in the original source, without decimal places.

Table 7

Descriptive Statistics for the Observed Primate Behavior Questionnaire

Behavior	*M*	*SD*	Range	*n*
Social grooming	4.8	*0.6*	2-5	44
Resting or walking	4.8	*0.4*	4-5	44
Social play	4.6	0.7	2-5	44
Social human interaction	4.6	0.9	1-5	44
Self-grooming	4.3	0.8	2-5	44
Submission	4.0	0.9	2-5	44
Solitary play	3.9	1.0	2-5	44
Competitive displays	3.8	1.0	1-5	42
Fixed gaze	3.5	1.1	1-5	43
Repetitive movements	3.4	1.3	1-5	44
Social sex	3.3	1.2	1-5	43
Competitive contact	3.2	1.0	2-5	44
Masturbation	3.1	1.1	1-5	44
Fecal handling	3.0	1.3	1-5	43
Hair pulling	2.7	1.1	1-5	44

Pearson's *r* correlational coefficients were also computed for the ProQOL and TIOC subscale scores, resulting in seventeen significant correlations. As the ProQOL's CS score increased, so too did the TIOC's supervisory support, peer support, organizational support, and trauma-informed caregiver development scores. As the

Table 8

Associations Between Continent of Residence and ProQOL and TIOC subscales

Variable	Africa			North America and Europe		
	M	*SD*	*n*	*M*	*SD*	*n*
ProQOL						
CS[a]	3.9	0.8	10	4.3	0.5	36
Burnout[a]	3.0	0.3	10	2.3	0.5	36
STS[a]	3.0	0.8	10	2.3	0.6	36
TIOC						
Overall TIOC	3.6	0.4	10	3.7	0.5	34
Supervisory support	4.0	0.5	10	3.9	0.7	34
Peer support[a]	3.3	0.9	10	3.8	0.6	34
Organizational support	4.2	0.6	10	4.0	0.7	34
TI development	2.9	0.9	10	3.1	0.7	34

Note. A higher CS score is interpreted as more satisfaction from work. A higher burnout or STS score indicates greater risk of developing that respective condition. A higher score within the TIOC support subscales suggests that participants feel more supported in that particular area. TI development = trauma-informed caregiver development.

[a] Variable significantly correlated with continent of residence.

the ProQOL's burnout score increased, the TIOC's supervisory support, peer support, and STS scores decreased. There were no statistically significant correlations between the ProQOL 5's STS scale and TIOC subscales. See Table 9 for more information regarding TIOC and ProQOL correlations, including overall TIOC score correlations. Each

participants' average score across the Observed Primate Behavior Questionnaire items were initially included in the correlational analysis but yielded no significant relationships with other variables.

Table 9

Correlational Relationships Between the TIOC and ProQOL Scales

Variable	1	2	3	4	5	6	7	8
ProQOL								
1. CS	—							
2. Burnout	.56***	—						
3. STS	-.06	.63***	—					
TIOC								
4. Overall TIOC	.60***	-.51***	-.13	—				
5. Supervisory support	.47**	-.32*	-.07	.64***	—			
6. Peer support	.41**	-.48**	-.09	.64***	.13	—		
7. Org. support	.34*	-.27	-.13	.78***	.35*	.32*	—	
8. TI development	.37*	-.28	-.07	.68***	.16	.23	.56***	—

Note. For correlations within ProQOL subscales, $n = 44$. For all other correlations, $n = 42$. STS = STS; TI development = trauma-informed caregiver development; Org. = organizational.

*$p < .05$, **$p < .01$, ***$p < .001$

Multiple Regression

Standard multiple regression analyses were conducted to identify potential predictors of CS, burnout, and STS. Following Stevens (2002) recommendation that there should be at least 15 responses for each predictor entered, we selected only three predictor variables for each dependent variable. All potential predictors were chosen based on the correlational findings previously presented. Results indicated that: 1) three variables (overall TIOC score, continent of residence, and gender) significantly predicted CS, $R^2 = 0.58$, $R^2_{adj} = 0.55$, $F(3, 40) = 18.60$, $p < 0.001$; 2) three variables (TIOC score, continent of residence, and career length) significantly predicted burnout risk, $R^2 = 0.64$, $R^2_{adj} = 0.61$, $F(3, 40) = 23.40$, $p < 0.001$; and 3) two variables (burnout score and career length) significantly predicted STS risk, $R^2 = 0.46$, $R^2_{adj} = 0.42$, $F(3, 42) = 12.00$, $p < 0.001$. To see standardized beta weight (β), *p*-values, and *t* values for each predictor variable refer to Table 10.

Qualitative Data Analyses

Thirty-nine participants responded to both open-ended questions. The average response was 25.1 words (range: 2-123 words) for work-reward items, and 31.3 words (range: 1-171 words) for work-challenge items. Two responses did not contain any of the seven major recurring themes for work-reward responses or the eight major themes for work-challenge responses. There were an average of 1.6 themes (range: 1-4) present in the work-reward responses and 1.3 themes (range: 0-3) in the work-challenge responses. To see descriptive information and example responses for each theme see Tables 11 and 12. Potential relationships between theme presence and ProQOL or TIOC subscale scores were explored through Pearson's *r* correlational coefficients after assumptions of linearity

were evaluated via visual inspection of scatterplots. Theme presence was a nominal, dichotomous variable that had a value of either 0 (i.e., absent), or 1 (i.e., present).

Table 10

Model Fit Coefficient Predictors for CS, Burnout, and STS

Variable	Predictor	β	*p*	*t*
CS	Overall TIOC	.50	< .001	4.81
	Continent	.24	<.05	2.36
	Gender	-.42	< .001	-4.02
Burnout	Overall TIOC	-.52	< .001	-5.31
	Continent	-.46	< .001	-4.75
	Career length	.35	< .005	3.52
STS	Burnout	.49	< .005	3.39
	Career length	.25	< .05	2.10

Note. A negative β value indicates a negative relationship between variables, where one increases as the other decreases, e.g., TIOC as a negative predictor of burnout suggests that lower TIOC scores will accompany higher burnout risk.

Exploring the presence of work-reward themes and ProQOL scores, mention of public change/conservation was associated with higher burnout scores, $r(37) = .38$, $p < .05$ while mention of captive history was associated with increased STS scores, $r(37) = .41$, $p < .01$. In relation to TIOC scores, mention of recovery/release was associated with decreased trauma-informed caregiver development scores, $r(37) = -.41$, $p < .01$. Increases in supervisory support scores were associated with mentioning enrichment, $r(37) = .33$, p

<.05, but decreases in supervisory support scores were associated with mentions of public change/conservation, $r(37) = -.35$, $p < .05$.

Correlational analyses between work-challenge theme presence and ProQOL scores showed that mentions of conservation concerns, $r(37) = .39$, $p < .05$, and resource constraints, $r(37) = .41$, $p < .05$, were associated with higher burnout scores. Mentioning resource constraints was also associated with higher STS scores, $r(37) = .42$, $p < .01$. Regarding TIOC scores and challenging workplace themes, mention of workplace disputes was associated with decreased overall TIOC scores, $r(37) = -.42$, $p < .01$, and organizational support scores $r(37) = -.55$, $p < .01$. Mention of conservation concerns was associated with lower peer support scores, $r(37) = -.55$, $p < .01$, whereas mentioning poor animal welfare correlated with lower organizational support scores, $r(37) = -.53$, $p < .01$.

Table 11

Rewarding Work Components (n =61)

Theme	Example quote	Frequency, *n* (%)
Animal wellbeing and welfare	". . . knowing they usually have this or that specific abnormal behaviour (*sic*) and after some weeks, months, years... Of constant care from us, those behaviours (*sic*) or signs of stress disappear. Basically, knowing their welfare is improving"	24 (39.3)
Human-animal relationship	"Getting to see and play with the chimps"	13 (21.3)
Enrichment	"Making enrichment and seeing how the chimps manipulate and interact with the finished products always makes me very happy."	7 (11.5)
Recovery or release	"Succeed in having a positive impact on the life of an animal by saving, caring for, rehabilitating, or even releasing it."	6 (9.8)
Mentioning of captive history	". . . Spending the years they have left trying to make up for the treatment/trauma they received in medical laboratories."	5 (8.3)
Public change or conservation	"The most gratifying thing for me is knowing that I am part of the solution to the critical situation that primates go through. Rescue centers in Africa play a vital role in their survival."	3 (4.9)
Workplace and environment	"As a volunteer, the staff is very supportive of my many questions. They are always willing to guide me and help me learn. It is often very fun despite a heavy work load (*sic*)."	3 (4.9)

Table 12

Challenging Workplace Components

Theme	Example	Frequency, *n* (%)
Job duties	"Keeping up with paperwork, emails, and logs"	16 (31.4)
Animal suffering	". . . The hardest part of the job is being there for them when they are going through this end stage of their life . . . And the more time I spend with them, the stronger our bonds grow, the harder it is to let them go. It is like losing a close friend or loved one. Absolutely heartbreaking . . ."	9 (17.6)
Workplace conflict	". . . tensions among staff, high physical workload, lack of recognition for the work I put in"	9 (17.6)
Poor animal welfare	"When the welfare of the animal can be improved and it is not done for various reasons: time, efficiency, various excuses ..."	5 (9.8)
Resource constraints	"The managers not advocating for the us subordinates and putting money before the animals."	5 (9.8)
Intercultural challenges	"Working with the national staff is always the most challenging part of the work . . . Working with the community, government and the inherent challenges of the country we are in."	3 (5.9)
Conservation concerns	"I see no hope for the project nor the animals in our care. No enforcement of existing laws, illegal poaching, deforestation, and a population that exceeds 200 million leads me to think that we are just taking care of animals and not doing anything substantial as far as conservation."	3 (5.9)
Mentioning of captive history	". . . despite all the efforts you make for an animal, there are new ones to be saved every day and the trafficking poaching / threats keep increasing . . ."	1 (2.0)

CHAPTER V

DISCUSSION

The prevalence and causes of compassion fatigue among individuals who work with wildlife and exotic animals remain a relatively new and understudied topic (Yueng et al., 2017). To the best of my knowledge, this study is the first to explore these concepts within primate sanctuary settings, offering a precursory understanding of compassion fatigue related to primate-husbandry. Overall, in contrast to similar animal-worker study populations, this study's participants showed lower risk of developing burnout or STS and greater work-related satisfaction (Scotney et al., 2019; Yueng et al., 2017). Consistent with previous literature, predictive relationships between burnout, STS, and CS (i.e., ProQOL subscales) and workplace support, career length, and gender were identified. A characteristic that appears to be uniquely influential for this sample is continent of residence, which correlated with participant STS and predicted burnout and CS. Based on qualitative responses, it was further observed that many components of primate husbandry, such as being able to provide enrichment or having awareness of primates' captive histories, are important contributors to burnout, STS, and perceived workplace support.

Burnout, STS, and CS Rates

A central goal of the current study was to assess burnout, STS, and CS rates among individuals working in primate sanctuaries. The current findings suggest that primate sanctuary personnel are at a significantly lower risk of developing compassion fatigue (i.e., experiencing burnout and STS concurrently) when compared to samples collected from individuals working in other caregiving sectors (McArthur et al., 2017;

Scotney et al., 2019; Yueng et al., 2017); comparisons made possible by standardization of ProQOL 5 categories across studies. Within the ProQOL 5 risk categories, the current study's rate of high-risk respondents ranged between 0 and 2.2 percent, compared to the 20 to 26 percent range reported in prior animal-care worker samples (Scotney et al., 2019; Yueng et al., 2017). Importantly, there was an even greater disparity between the current sample's high-risk rates and those found in most healthcare samples (e.g., 29.3 percent of pediatric nurses showed high burnout risk; Berger et al., 2015), suggesting that primate carer respondents occupied roles which inherently produce less burnout and STS risk.

The low rate of burnout and STS risk is a positive sign for the primate sanctuary field, as it indicates that a majority of the current sample reported low occurrence of burnout and STS side effects, such as feeling trapped by their caregiving duties or experiencing intrusive and frightening thoughts. Additionally, with 97.8 percent of the primate sanctuary personnel in this study having moderate to high levels of CS, current findings suggest that work with primates, in general, produces joy, fulfillment, and satisfaction. As previously noted, high rates of burnout or STS within caregivers have overarching implications for the quality of care they are able to provide patients (Canadian Nurses Association, 2010; Vahey et al., 2004). This study's promising results indicate that primate caregivers may not be hindered in their ability to provide satisfactory care.

Sanctuary Characteristics

One potential explanation for the comparatively low burnout and STS riskfound in this sample of sanctuary personnel compared to other animal-related workers may be

that primate sanctuaries encourage regular enrichment and prosocial caregiver-primate interactions and have reduced euthanasia use (Association of Zoos and Aquariums Taxon Advisory Group [AZA TAG], 2010; Global Federation of Animal Sanctuaries [GFAS], 2013). In the current study, a majority of respondents were affiliated with accredited sanctuaries (90.2%), many of which have strict guidelines for daily enrichment. For example, GFAS (2013), which accredits many sanctuaries within North America, Europe, and Africa, requires great ape-housing sanctuaries to maintain:

> a formal, written enrichment program that promotes species-appropriate behavioral opportunities and ensures the captive great apes' psychological well-being. A complete environmental enrichment program includes the following: structural enrichment . . . object enrichment . . . food enrichment . . . [and] social enrichment. (p. 38)

The positive impact of animal enrichment on caregivers is indicated by Lafollette et al.'s (2020) finding from laboratory employees who mainly worked with mice or non-human primates. Individuals in that study had lower risk of burnout when the animals in their care were regularly provided with enrichment, especially novel enrichment. Thus, if enrichment standards are upheld throughout most primate sanctuaries, their use may contribute to the current sample's relatively low risk of burnout.

In Lafollette et al's (2020) study, CS also increased as the rate of positive animal-caregiver interactions rose. In the current study, 21.3 percent of respondents noted in their qualitative responses that animal-human bonds and interacting with animals were a highly rewarding part of their work, suggesting that prosocial caregiver and primate bonds are encouraged (or, at least, not discouraged) within most sanctuaries. Promoting

such bonds is consistent with great ape care standards; the two main accrediting organizations for primate sanctuaries (i.e., GFAS and AZA) encourage safe, prosocial interactions between caregivers and primates. For example, GFAS (2013) recommends that "apes are given the freedom to integrate with their conspecific social group with minimal human interference or to interact regularly with caregivers if they choose," (p. 39) and that "positive relationships between apes and caregivers are maintained" (p. 39). Once again, these standards suggest that a cultural attitude within sanctuary environments that promotes prosocial primate and caregiver interactions will enhance CS.

Lafollette et al. (2020) also found that engaging in euthanasia or witnessing animal suffering increased burnout risk among laboratory personnel, mirroring reports from animal shelter and veterinary sector samples (Hill et al., 2019; Rohlf & Bennett, 2005). Within accredited sanctuaries, euthanasia is only allowed as a final resort; the AZA TAG (2010) dictates that within captive chimpanzee populations, "euthanasia should be considered for progressively deteriorating quality of life, intractable disease without cure, or irreparable trauma" (p. 45). The other major accrediting body, similarly, requires that euthanasia be humane, only be administered as a last resort, and never be used to create space for new captive individuals (GFAS, 2013). The same is not true for some laboratory environments, in which euthanasia is performed as a management tool rather than an end-of-life approach (McAndrews & Helms-Tillery, 2016). Because a majority of the current study's participants reported working in an accredited sanctuary, it is possible that infrequent use of euthanasia contributed to this sample's low burnout risk. Thus, these findings suggest that common practices within sanctuary environments (e.g., encouraging prosocial relationships, novel enrichment, and reduced animal pain) may

contribute to the low risk of burnout or STS and the high rates of CS observed in the current sample.

Workplace Support

Total workplace support (i.e., a combination of all four support categories measured by the TIOC) predicted CS and burnout, with higher workplace support resulting in greater CS and lower burnout risk. Correlational analyses further revealed that each TIOC subscale (i.e., supervisory support, peer support, organizational support, and trauma informed caregiver development) individually correlated with CS in the current sample, with greater satisfaction and fulfillment from work being evident when individuals felt more support in all workplace categories. Lower perceived support from supervisors and peers was associated with increased burnout risk. STS was not influenced by any workplace support components directly but, because it was heavily related to burnout, it may be indirectly influenced by peer and supervisory support. Thus, reduced peer and supervisory support may result in higher burnout risk, which would predict increased STS risk. Cumulatively, these relationships indicate that a supportive organizational culture is essential for maintaining employee wellbeing and satisfaction; a finding consistent with prior studies evaluating other occupations (Handran, 2015; Hunsaker et al., 2015; Kelly et al., 2015; Maslach & Leiter, 2016).

Career Length and Gender

This study's findings add to the growing body of literature that indicates career length and gender can predict burnout, STS, or CS within certain workforces. Among primate carers in the current study, respondents with more years in the profession were at an increased risk of developing burnout and STS. Similar findings have been observed in

acute care nursing, oncology nursing, and some animal-care worker samples (Kelly et al., 2015; Scotney, 2019; Yu et al., 2016). It should be noted, however, that the connection between career length and burnout is not uniform across studies, with some researchers reporting that career length only influences CS or does not impact any of the ProQOL components at all. For example, Yueng et al. (2017) found that more years in the profession was associated with higher CS but had no significant impact on burnout or STS among wildlife rehabilitators, which is inconsistent with the current findings. This may be attributable to between-occupation attrition rates. Specifically, within some professions there is evidence that increased burnout predicts employee intention to change careers or resign from current roles (Hämmig, 2018; Rudman & Gustavsson, 2011). If this relationship only exists within certain professions, it may explain the discrepant findings between career length, burnout, and STS across samples.

The impact of gender on burnout, STS, and CS also does not translate uniformly across studies. Within the current study sample, gender was a significant predictor of CS but not of burnout or STS risk, with being a woman associated with higher CS scores. Gender differences in CS have also been reported in nurse and mental health counselor samples (Prost & Middleton, 2020; Roney et al., 2018). Other studies, in animal-workers, have found no support for associations between gender and measures of burnout, STS, or CS (Scotney et al., 2019; Yueng et al., 2017). Given these discrepant findings, it appears likely that the influence of gender and career length on CS, burnout, and STS differs among individuals, job descriptions, employers, and professional fields. Once again, these differences may be explained by between-occupation retention trends in that women in certain professions may be more likely to change careers when experiencing

low CS compared to women in other professions. As such, it is important that compassion fatigue and CS research continues to look at the individuality of specific organizations and niche professions so as to better tailor preventative strategies.

Country of Residence

The current findings indicate that continent of residence (i.e., Africa or North American/Europe) influenced burnout, STS, and CS. Specifically, working in Africa correlated with an increased risk of STS and lower perceived peer support, and predicted lower CS and higher burnout risk. In part, these findings may be due to the timing of this study; African centers experienced increased resource constraints as a result of the coronavirus disease (COVID-19) pandemic. The Pan African Sanctuary Alliance (2020), for example, reported that travel bans hinder sanctuaries which typically rely on ecotourism and international volunteers for financial and workforce support. Additionally, financial resources may have been exhausted as the need for protective equipment increased and the price of fresh produce, which is the main food source for many captive primates, fluctuated in response to pandemic-driven economic changes (Nordhagen, 2020; Pan African Sanctuary Alliance, 2020).

Another potential explanation for these findings may be that workers or volunteers in Africa are more acutely aware of conservation threats facing primate species. Given their proximity to free-ranging primates, I suggest that workers in African sanctuaries may witness the negative outcomes of human-activity on a regular basis (e.g., frequently caring for animals orphaned by the bushmeat trade; Project Primates, 2019). Qualitative responses support this potential explanation, in that none of the European or North American respondents mentioned conservation concerns as a work-related

challenge, while 40 percent of African-residing respondents did. Though continent of residence seems to be an important predictor for CS and burnout risk within the current study's sample, this relationship should be explored further, as only 10 of the current Africa-residing participants completed the ProQOL 5.

Burnout

In my analyses, burnout correlated with CS and directly predicted STS scores. Surprisingly, CS and STS were not associated in the current sample. This finding is in contrast to previous reports that CS scores increase as STS decreases and vice versa (see Hotchkiss, 2018, or Hemsworth et al., 2018, for more detail). Based on the predictive relationship identified in the current study in which burnout scores predicted STS scores, I suggest that burnout may mediate STS development within the current sample. If a primate care organization has limited resources for burnout and STS reduction or prevention, burnout-focused interventions may be especially useful, as lowering burnout may concurrently reduce STS. Fortunately, a substantial number of intervention strategies have been found to reduce employee burnout rates upon implementation, such as cognitive behavioral therapy technique training, meditation, mindfulness, and online counseling programs (for more examples, see Awa et al. [2010] and Jaworska-Burzyńska et al. [2016]).

Self-Reported Rewards and Challenges

In the current study, qualitative comments focused on animal-human relationships and one's ability to contribute to, or witness the results of, improved animal welfare were most frequently reported in response to the question regarding the most rewarding components of primate care work. These themes align with previous literature which has

highlighted personal fondness for animals as a common motivator for veterinarians' career choices. A study assessing veterinary students' motivators during their coursework found that those courses that involved direct handling or interacting with animals were the most rewarding and influential in staying academically stimulated (Parkinson et al., 2006). Within a sample of recent veterinary graduates, roughly 25 percent reported choosing their career because of liking or wanting to help animals (Cake et al., 2019). In the current study, performing difficult or tedious job duties, witnessing animal suffering, or experiencing workplace conflict were the three most frequently reported challenging components of respondents' work. In total, eight challenging and seven rewarding themes were identified in qualitative responses from the current sample. Surprisingly, CS scores did not appear to be affected, either positively or negatively, by the presence of any specific themes. The presence of so many themes, and the absence of a clear relationship between individual themes and CS, potentially indicates that there are a wide range of motivators and stressors within primate care.

Examining the responses related to rewarding components of respondents' work in greater detail, themes relating to being aware of the captive histories of primates, inspiring public change or promoting conservation, participating in successful release and recovery of primates, and providing enrichment for primates were especially important for STS risk and perceived workplace support. Responses that mentioned primates' previous history in captivity or inspiring public change or contributing to conservation efforts were associated with higher STS. To illustrate the theme of primate captive histories, one participant wrote that the most rewarding component of their work was "Spending the years they have left trying to make up for the treatment/trauma they

received in medical laboratories." This response suggests a conscious awareness of primates' previous suffering, which could contribute to higher STS risk. In other caring professions, STS is commonly believed to develop from exposure to another individual's trauma (Figley, 1995; Figley and Roop, 2006). For example, listening to clients recount traumatic experiences can lead counselors to experience STS, and in nursing, STS commonly results from witnessing patient suffering (Herman, 1992; Sabo, 2011). Within the current study sample, being aware of an animal's captive history may be akin to a counselor learning of their clients' trauma, which may potentially explain the association between mentioning primates' captive history and increased STS.

Likewise, the presence of themes related to inspiring public change or contributing to conservation in the qualitative responses suggests that participants are acutely aware of the threats that primate species face as a result of human activity. For example, one participant wrote "the most gratifying thing for me is knowing that I am part of the solution to the critical situation that primates go through. Rescue centers in Africa play a vital role in their survival." Recent research has begun to explore how awareness of environmental degradation and ecological crises negatively impact mental health, resulting in guilt, shame, anxiety symptoms, and depressive symptoms (Panu, 2020). This relationship between environmental awareness and degraded mental health may, in part, explain the finding that mentioning public change or conservation was associated with increased risk of STS in the current study. Mentioning public change or contributing to conservation was also associated with lower perceived supervisory support within this sample, although the potential mechanisms underlying that relationship cannot be elucidated from my study data.

Participants who mentioned providing enrichment as the most rewarding component of their work perceived their supervisory support to be greater, suggesting that organizations which emphasize enrichment provision may also encourage positive support systems between supervisors and supervisees. Surprisingly, mentioning successful release and recovery resulted in lower trauma-informed caregiver development support scores (i.e., scores from the TIOC inventory that gauge the amount of trauma-specific training employees receive through their employer), though this finding should not be perceived as inherently negative. It is possible that organizations with high rates of recovery and release have less need for trauma-support trainings, as their employees and volunteers are not exposed to high rates of animal death.

Alternatively, employers may provide less mental health and trauma focused trainings because they perceive their workforce to have generally positive mental health. For example, Pescud (2015) found that many employers felt they had a duty to monitor mental health within their employees and provide support as needed, but that they would typically refrain from doing so unless an issue was evident. If the same practice is common within sanctuaries, it is possible that managers who run facilities with high recovery rates believe that this protects their workforce from trauma, reducing any perceived demand for trauma-specific training. This potential relationship could be explored further through a study design that examines sanctuary recovery rates, managerial perceptions of wellbeing, and the amount of trauma training provided to employees.

Within themes related to the most challenging components of respondents' work, participants who reported organizational resource constraints, primate conservation

concerns, workplace disputes, and poor animal welfare standards as challenges had higher burnout and STS risk, and lower workplace support than those who did not mention those challenging components of their work. Mention of organizational resource constraints was correlated with higher burnout and STS scores. Previous literature has highlighted budgetary demands and reduced workforce as two potential contributors in burnout and STS development, which may explain these findings (Figley & Roop, 2006; Vahey et al., 2004). Mention of primate conservation concerns was associated with higher STS risk and lower peer support scores. This may, in part, stem from the impact that acute awareness of primate's conservation plights and increased ecological awareness can have on mental health as previously noted.

The presence of workplace disputes as a challenging work theme was correlated with lower perceived organizational support and lower overall workplace support, as measured by overall TIOC scores. The social exchange theory, which is popularly used to explore workplace roles and obligations, may offer a possible explanation for this finding. Social exchange theory literature suggests that "advantageous and fair transactions between strong relationships . . . produce effective work behavior and positive employee attitudes" (Cropanzano & Mitchell, 2005, p. 882). To illustrate, one of the participants, who had a relatively low perception of organizational support, wrote "managers not advocating for the us [*sic*] subordinates and putting money before the animals . . . favoritism within the staff (friends and family managing each other), relation for speaking up for the animals or speaking out against the favoritism occurring." Evaluating this response from the social exchange theory, it is evident that increased

workplace disputes, which stem from weaker relationships or inequitable transactions, could result in lower perception of organization support.

Mention of frustration over employers not prioritizing animal welfare was associated with lower perceived organizational support. Various studies have found evidence that women show increased concern for animal welfare and greater support for Brambell's Freedoms, which dictate that captive animals should have freedom: 1) from hunger and thirst; 2) from discomfort; 3) from pain, injury, or disease; 4) to express normal behavior; and 5) from fear and distress (Brambell Committee, 1965; Driscoll, 1992; Riggio et al., 2020; Signal & Taylor, 2006). Because of these findings, and the current study's overwhelmingly female sample, I suggest that animal welfare is especially important for this study's participants and has the potential to impact employee-employer relations.

Recommendations for Primate Sanctuary Leadership

Based upon the findings of the current study, there are a few practices that primate sanctuary directors and managerial personnel might consider implementing if they have not already done so at their facility. These include: 1) emphasizing in their communications to employees and volunteers that management prioritizes animal wellbeing; 2) providing employees with opportunities to engage in positive, appropriate interactions with the primates in their care; 3) encouraging the development of friendships among and between employees and leadership staff; 4) fostering discussions related to primate residents' previous suffering and the current conservation threats that free-ranging primate species face; and 5) assessing the stressors specific to their organization and using appropriate strategies to lessen their impact.

The majority of the current sample found their work with primates to be intrinsically rewarding. Specifically, 39.3 percent of participants reported that contributing to primate wellbeing was the most rewarding component of their work and over 20 percent reflected on positive human-primate relationships. Accordingly, I recommend that sanctuary leadership emphasize in their communications to their employees their continuing goal of prioritizing animal welfare and wellbeing, while also working to promote positive, appropriate interactions between caregivers and primates. One way in which this could be accomplished is through regularly scheduled positive reinforcement training. Positive reinforcement training can provide caregivers the opportunity to interact with primates, furnish employees with new professional skills, and has been found to decrease the stress captive primates experience during veterinary and husbandry procedures (Laule & Whittaker, 2007).

Workplace support is important for reducing burnout and increasing CS. Research suggests that workplace support can be improved or maintained by promoting positive relationships within the organization. Friendships should be encouraged throughout the organization, regardless of hierarchical roles (Colbert et al., 2016; Song & Olshfski, 2008). Song and Olshfski (2008) recommend that employers create opportunities for friendships with and among their employees by establishing organizational norms and rules which promote such relationship building. This could include planning routine staff parties or social lunches, where sanctuary personnel are encouraged to interact freely with one another (Chen et al., 2018). Creating equitable and fair division of labor and offering appropriate recognition and reward for employee contributions may also aid in

strengthening workplace support (Chen et al., 2018; Figley & Roop, 2006; Jasperse et al., 2013; Kelly et al., 2015).

Awareness of primates' conservation threats or knowledge of individual animal's captive history influenced burnout and STS scores in the current sample, suggesting that these topics may be relevant areas for trauma-related intervention. Compassion fatigue research emphasizes the beneficial impact that emotional support, specifically debriefing opportunities, can have on employee wellbeing (Lombardo & Eyre, 2011; Maytum et al., 2004). Therefore, sanctuary directors should encourage guided discussion of such topics, allowing employees to talk through their thoughts and emotions related to primate suffering as needed. A similar approach could be adopted following any traumatic or emotionally taxing events, such as the disability or death of a primate in their care.

Lastly, sanctuary leadership may benefit from regular assessment of organization-specific stressors. Workplace interventions are most effective when tailored to specific employee populations (Doulougerie et al., 2016). To illustrate this point, some organizations may be more susceptible to stressors resulting from being short staffed or having reduced budgetary funds, while other sanctuaries may face challenges more closely related to workplace conflict. In these scenarios, the most effective interventions should be matched to the current issues that staff face. Normalizing stressor related conversations within the workplace may further enable leadership to identify potential stressors before they culminate in burnout or STS.

Primate Behavior

The Observed Primate Behavior Questionnaire was included in the current study in order to determine if the frequency at which caregivers observed different behavior

types was associated with STS or burnout. Unfortunately, while the questionnaire was intended to consist of distinct behavior categories, analysis indicated that if one behavior was observed, most other behaviors were likely to also be observed, negating my ability to measure distinct categories. It appears that this inventory measured one overall construct, such as behavior visibility or behavioral activity. If the Observed Primate Behavior Questionnaire measured overall visibility of captive primates, it may be that survey respondents working in environments which allow abundant observation time would report seeing more behaviors at an increased frequency, regardless of how often they actually occurred. Similarly, a sanctuary layout less conducive for observations may have resulted in employees seeing all behaviors less frequently and reporting that accordingly on the survey. If the questionnaire probed overall group activity rather than visibility, it would be expected that an extremely active troop would be engaging in all of the behaviors that my questionnaire asked about regularly. In contrast, a less active group should engage in all of these behaviors at a lower, but still consistent, level.

These relatively uniform behavior observation frequencies may also be a result of observer effect or perceptual bias. A commonly noted issue in free-ranging primate behavior studies is observer effect (i.e., any noticeable change in animal behavior that is caused by a human observer's presence in the animal's environment; Lehner, 1996). There is some recent evidence suggesting that humans can never truly be perceived as neutral stimuli, even after habituation or acclimation protocols are completed (Allan et al., 2020). If this applies to the captive primates who were cared for by my survey respondents, it is possible that behavior frequency rates were affected by caregiver

presence, though the current study design does not allow for this explanatory hypothesis to be tested.

Another potential explanation for the Observed Primate Behavior Questionnaire's construct invalidity is that it measured respondents' perception of behavior rather than behavior itself. In animal behavior studies, it is generally agreed that to avoid errors, behavioral data collection should be done using rigid and fixed procedures, which the current study did not account for (Strier, 2018). For example, a popular approach for studying group behavior is scan sampling, which requires that researchers collect data at fixed, predetermined points in time to avoid biasing their results (Altmann, 1974). This method allows researchers to gather data in real-time, using clearly defined behavior ethograms, and avoid potential observation errors that result from memory recall constraints or personal bias (e.g., misreading a behavior because it is not operationally defined for the focal species). During initial study design, it was hypothesized that behavior frequency perception would provide a functional variable but my findings suggest that observing caregiver and animal interactions directly may be a more pragmatic approach for future research.

ProQOL and TIOC use Among Animal-Care Professionals

This study adds to the growing body of literature that supports the ProQOL 5 for use among individuals working with non-human animals in caring roles (Scotney et al., 2019; Yueng et al., 2017). Based on this study's high inter-item reliability scores, I believe that the ProQOL 5 produced statistically valid measurements of burnout risk, STS risk, and CS. Additionally, my findings support Handran's (2013) conclusion that the TIOC can be a useful accompaniment to the ProQOL 5. Researchers interested in

measuring perceived workplace support types may choose to consider using the TIOC. The abundance of correlations between TIOC subscales scores and the ProQOL 5's CS and burnout scores indicated that this inventory is conceptually valid in its ability to measure different forms of workplace support that impact employee satisfaction.

Limitations

Consistent with previous literature sampling carers of non-companion, wildlife species, the current study's sample size was relatively small (complete survey responses: $n = 41$; Yueng et al., 2018). Regression analyses that rely on small samples can produce type one or type two statistical errors, though appropriate measures were implemented during analysis in order to reduce error risk (i.e., ensuring there were 15 responses for each predictive variable included in analysis, as suggested by Stevens [2002]). Due to sample size and the potential of a statistical error inflating results, generalization of current findings should be limited. As with any self-report research, there are also challenges regarding respondent honesty. While previous research has indicated that burnout and STS involve chronic mental and physical exhaustion (Cunningham, 2003; Figley & Roop, 2006; Fruedenberger, 1974; Sabo, 2011), which may decrease response rates or participant honesty, the questionnaires used in this survey are usually capable of identifying approximate risk of burnout, STS, and reduced CS (Stamm, 2010).

A disproportionate number of respondents in the current study's sample reported living in North America (56%), which is not representative of the profession, as a majority of primate-housing facilities are located within Africa (e.g., North America has eight accredited sanctuaries while Africa has 23; NAPSA, 2020; PASA, n.d.). A majority of this sample also identified as women (82%). Based on unofficial reports from a

sanctuary co-director in North America, this number is inflated but not grossly inaccurate. Within the sanctuary-based primate husbandry field, it is estimated that the gender ratio is 2:1, with women-identifying employees comprising roughly 66 percent of the volunteer and employee workforce (J. Mulcahy, personal communication, March 4, 2021). Despite these limitations, I believe that this sample included a wide range of individuals within the primate caregiver population (e.g., ages ranged from 21 to 70 years old and respondents resided across three continents including Africa, Europe, and North America), suggesting that recruitment attempts were successful in targeting a diverse participant pool.

Another potential limitation of the current study was the period in which data was collected. Survey administration began and ended during the COVID-19 pandemic, which has had profound effects for many citizens around the world. At the end of the current study's data collection period (i.e., July 27th, 2020), over 600,000 coronavirus related deaths had been reported globally (World Health Organization, 2020). Current research suggests that pandemic-related isolation, fear of contagion, economic challenges, and general uncertainty may be contributing to increased rates of mood disorders (e.g., depression and anxiety), substance use disorders, and suicidal behaviors (Reger et al., 2020; Sher, 2020; Twenge & Joiner, 2020). Although I cannot statistically quantify how these factors impacted survey respondents, it is possible that facilities which rely heavily on ecotourism, international support, or a volunteer workforce were strained by travel-bans and food shortages (Usui et al., 2020). Within North America, for example, many sanctuaries limited or suspended volunteer shifts and expanded cleaning

procedures, potentially altering employees' daily job duties (Mulcahy, 2020; Smith, 2020).

Future Research

To build on the current findings, future researchers could recruit a larger sample of respondents, particularly from Africa-based sanctuaries and preferably after the severity of COVID-19 has decreased. Surveying individuals from various animal-related careers (e.g., veterinarians, animal control employees, wildlife rehabilitators, and zoo caregivers) simultaneously would allow for direct between-group comparisons. This would be a statistically sound approach for determining whether compassion fatigue risk truly is lower among sanctuary personnel compared to other animal-related workers. Such a design might also allow researchers to determine if burnout, STS, and CS levels were impacted by COVID-19 as well.

The relationship between observed abnormal behavior rates and burnout or STS risk should be explored further. The Observed Primate Behavior Questionnaire utilized in the current study was not a useful tool to differentiate observations of distinct behavioral categories, but alternative data collection techniques may prove useful. For example, all occurrence sampling could be employed to determine the rate of abnormal and agonistic behavior displays during primate-caregiver interactions, before being correlated with caregiver burnout, STS, and CS scores. Further, I suggest that future studies evaluate African sanctuaries in greater depth, recruiting more individuals from these locations, and exploring continent and country specific occupational hazards. Within my study's sample, African residents showed a greater risk of experiencing burnout, STS, or low CS, but a larger sample would allow for greater understanding of the unique challenges faced

by carers in Africa. Lastly, I recommend that future research ask participants about euthanasia, enrichment, and prosocial primate and caregiver relationships at their organization. Based on the current findings and those from Lafollette et al. (2020), these characteristics may contribute to my sample's low risk of burnout, STS, or decreased CS. Future questions should probe respondents' individual experiences and gauge attitudes and norms at the organizational level, to determine any direct correlational or predictive relationships among these variables.

Conclusion

Collectively, the current findings suggest that sanctuary-based primate-husbandry is intrinsically rewarding and characterized by fairly low compassion fatigue risk. Overall workplace support within this occupation seems to be especially paramount in determining high burnout and low CS risk. Those individuals living within North America or Europe displayed greater CS and lower risk of burnout, females showed higher CS, and individuals with less time in the profession showed lower burnout and STS risk, contributing to the varied findings throughout the compassion fatigue literature. Additionally, qualitative responses indicate a wide range of challenges (e.g., frustration over organizations not upholding high animal welfare standards) and rewards (e.g., being able to enrich primates' daily lives) within the sanctuary-based primate husbandry field, which can influence an individual's burnout, STS, and perception of workplace support.

The variation between some of the current findings and those of other studies (e.g., women having higher CS in the current study but not in Scotney et al.'s [2019]) suggests that occupational risks vary greatly between samples or differential attrition rates across populations or samples. Therefore, I support Doulougerie et al.'s (2016)

recommendation that occupational risks should be assessed at an organizational level. Within a single profession, even one that is relatively small, the variables that impact burnout, STS, and CS likely differ between individuals, job duties, regions, and employers. Because of this, it is important that occupational hazard research and subsequent prevention or intervention strategies be tailored to specific facilities and affiliated persons. Once again, I caution against overgeneralizing these findings to the entire field of sanctuary-based primate-husbandry, but hope the current findings foster preliminary discussion on characteristics pertinent to employee wellbeing and satisfaction within this career.

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CHAPTER IV

Appendix A

Participation Invitation Email

Dear primate center personnel,

I am inviting any and all persons who actively work or volunteer with primates at sanctuaries or wildlife centers to participate in an online survey.

The main goal of this study is to understand your wellbeing as someone who cares for primates. The information you share is important and I believe that knowing more about you and your work will help other caregivers. If you volunteer, intern, work, or conduct research with primates, I'd like to hear about your experiences. **Your anonymity is important to me and you will not be asked to provide information that might identify you or your workplace.**

The survey will take about 20-30 minutes to complete. My goal is to better understand human-primate relationships and present the findings from this research in an effort to help decrease occupational stress in primate caregivers. By choosing to participate, you will also help me complete data collection for my master's thesis. To thank you for your time, you will have the chance to enter a gift card drawing at the end of the survey. **$50 Visa gift cards (or money orders when gift cards are not appropriate) will be randomly awarded to six participants.**

The study is managed by myself, a master's student in Central Washington University's Primate Behavior and Ecology Program, and Dr. Kara Gabriel, my advisor. The Human Subject's Review Council has approved all study procedures (study number _).

The survey is available in both English and French and can be completed on mobile phones or computers. We will accept survey responses until September 25th, 2020.

If you would like to participate, you may begin the survey now by following this link: Hyperlink

Thank you for your time and your responses!

Madalyn Rantala
MSc Student Primate Behavior and Ecology
Central Washington University

Appendix B

Demographic Questions

1. How did you hear about this survey?
    a. From a friend or colleague
    b. Through the North American Primate Sanctuary Alliance (NAPSA)
    c. Through the Pan African Sanctuary Alliance (PASA)
    d. Through the Global Federation of Accredited Sanctuaries (GFAS)
    e. Other, please specify
2. What is your age in years? _____
3. With which gender do you most identify?
    a. Female
    b. Male
    c. Other, please specify
    d. Prefer not to answer
4. What continent do you live on?
    a. Africa
    b. Asia
    c. North America
    d. Central of South America
    e. Europe
    f. Other, please specify
    g. Prefer not to answer

Appendix C

Modified Professional Quality of Life (PROQOL) Version 5

COMPASSION SATISFACTION AND COMPASSION FATIGUE (PROQOL) VERSION 5 (2009)

When you care for primates you have direct contact with their lives. As you may have found, your compassion for those you care for can affect you in positive and negative ways. Below are some questions about your experiences, both positive and negative, as a caregiver. Consider each of the following questions about you and your current work or volunteer situation. Select the number that honestly reflects how frequently you experienced these things in the *last 30 days.*

1=Never 2=Rarely 3=Sometimes 4=Often 5=Very Often

1.	I am happy.	1 2 3 4 5
2.	I am preoccupied with more than one primate I care for.	1 2 3 4 5
3.	I get satisfaction from being able to care for primates.	1 2 3 4 5
4.	I feel connected to others.	1 2 3 4 5
5.	I jump or am startled by unexpected sounds.	1 2 3 4 5
6.	I feel invigorated after working with the primates I care for.	1 2 3 4 5
7.	I find it difficult to separate my personal life from my life as a caregiver.	1 2 3 4 5
8.	I am not as productive at work because I am losing sleep over traumatic experiences of a primate I care for.	1 2 3 4 5
9.	I think that I might have been affected by the traumatic stress of the primates I care for.	1 2 3 4 5
10.	I feel trapped by my job as a caregiver.	1 2 3 4 5
11.	Because of my work as a caregiver, I have felt “on edge” about various things.	1 2 3 4 5
12.	I like my work as a caregiver.	1 2 3 4 5
13.	I feel depressed because of the traumatic experiences of the primates I care for.	1 2 3 4 5
14.	I feel as though I am experiencing the trauma of a primate I have cared for.	1 2 3 4 5
15.	I have beliefs that sustain me.	1 2 3 4 5
16.	I am pleased with how I am able to keep up with caregiving techniques and protocols.	1 2 3 4 5
17.	I am the person I always wanted to be.	1 2 3 4 5
18.	My work makes me feel satisfied.	1 2 3 4 5
19.	I feel worn out because of my work as a caregiver.	1 2 3 4 5

20.	I have happy thoughts and feelings about those I care for and how I could help them.	1 2 3 4 5
21.	I feel overwhelmed because my workload seems endless.	1 2 3 4 5
22.	I believe I can make a difference through my work.	1 2 3 4 5
23.	I avoid certain activities or situations because they remind me of frightening experiences of the primates I care for.	1 2 3 4 5
24.	I am proud of what I can do to help.	1 2 3 4 5
25.	As a result of my caregiving, I have intrusive, frightening thoughts.	1 2 3 4 5
26.	I feel "bogged down" by the system.	1 2 3 4 5
27.	I have thoughts that I am a "success" as a caregiver.	1 2 3 4 5
28.	I can't recall important parts of my work with traumatized or distressed primates.	1 2 3 4 5
29.	I am a very caring person.	1 2 3 4 5
30.	I am happy that I chose to do this work.	1 2 3 4 5

Appendix D

Trauma-Informed Organizational Culture (TIOC) Survey

Please rate the following statements.

1=Strongly Disagree 2=Disagree 3=Undecided 4=Agree 5=Strongly Agree

1.	My organization values people who have different types of skills.	1 2 3 4 5
2.	My organization values me as a person.	1 2 3 4 5
3.	My organization encourages me to take care of myself.	1 2 3 4 5
4.	I feel like my organization does not support me.	1 2 3 4 5
5.	I feel comfortable talking to my supervisor about work related problems.	1 2 3 4 5
6.	My supervisor asks me for suggestions or about my opinions.	1 2 3 4 5
7.	I receive regularly scheduled supervision for my job.	1 2 3 4 5
8.	My supervisor encourages me to take care of myself.	1 2 3 4 5
9.	I trust my supervisor.	1 2 3 4 5
10.	My supervisor supports my decisions.	1 2 3 4 5
11.	I trust my co-workers.	1 2 3 4 5
12.	My co-workers know at least a few personal things about me (for example: my birthday, partner's name, favorite type of food or hobby).	1 2 3 4 5

13.	I generally like my co-workers.	1 2 3 4 5
14.	I feel comfortable discussing work related problems with my co-workers.	1 2 3 4 5
15.	I feel comfortable discussing personal problems with my co-workers.	1 2 3 4 5
16.	I have received training through my current job to help me effectively work with individuals who have experienced trauma.	1 2 3 4 5
17.	I have received information at my current job on the importance of self-care.	1 2 3 4 5
18.	I have received information at my current job on compassion fatigue.	1 2 3 4 5
19.	I work in an agency that supports my self-care efforts.	1 2 3 4 5

Appendix E

Observed Primate Behavior Questionnaire

Below is a list of behaviors that Freeman and Ross (2014) developed based on a list the Lincoln Park Zoo uses to monitor captive chimpanzees and gorillas. **For each behavior please indicate how often you witness it occurring among the primates that you work with in a typical week.** If you see a behavior less than once a week, "rarely" would be an appropriate response. For behaviors that you see multiple times each workday, "very often" would be appropriate. If a listed behavior is not common among the species you work with, or is not possible at your facility, please select NA.

1= Never **2=** Rarely **3=** Sometimes **4=** Often **5=**Very Often

NA

1. Play between 2 or more primates (such as tickling, wrestling, or chasing) (such as wrestling or chasing)
2. Social grooming between 2 or more primates
3. Positive interaction with humans/caregivers (such as begging gestures or chasing games)
4. Self-grooming
5. Solitary play (such as a primate playing with an object alone)

6. Resting or walking around enclosure
7. Fixed gaze directed towards something/someone for 3 or more seconds without moving
8. Handling, throwing, “painting” or eating feces
9. Pulling out hair (of self or another)
10. Repetitive body or hand movements (such as rocking or twisting neck repeatedly)
11. Competitive displays (such as chest-beating, stomping, lunging, or charging WITHOUT physical contact)
12. Competitive contact (such as grabbing, biting, or scratching between 2 or more primates)
13. Submission (such as leaving an area when a more dominant member arrives)
14. Social sex (such as mounting, thrusting, or copulating with another)
15. Masturbation (such as using an object to stimulate own genitals)

Appendix F

Work-Related Questions

1. Please select the role that most closely matches your official title at the animal center with which you are affiliated:
    a. Volunteer
    b. Intern
    c. Paid employee
    d. Other, please specify
2. How long would you estimate that you've worked with primates?
    a. Less than 1 year
    b. 1 to 5 years
    c. 5 to 10 years
    d. 10 to 15 years
    e. More than 15 years
3. On average, how many hours per week are you involved in direct care of primates (such as feeding, interacting with, or cleaning up after primates)?
    a. Less than 10
    b. Between 10-20
    c. Between 20-30
    d. Between 30-40
    e. More than 40
4. Please select all levels of accreditation or membership the sanctuary or wildlife center you are affiliated with has:

    a. Global Federation of Animal Sanctuaries (GFAS) accreditation
    b. Pan African Sanctuary Alliance (PASA) membership
    c. North American Primate Sanctuary Alliance (NAPSA) membership
    d. Other, please specify
    e. I don’t know
    f. None of the above
5. What is the most rewarding part of your work?
6. What is the most challenging part of your work?