Resilience in Animal Care Professions: Does the Stress Shield Model Fit?

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Submitted in partial fulfilment of the requirement for the degree of Bachelor of Psychology with Honours at the University of Tasmania.

2020

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Statement of Sources

I declare that this report is my own original work and that contributions of others have been duly acknowledged.

Signature: Nicole Cushing Date: 15/10/2020

Acknowledgements

Firstly, I would like to thank my supervisors Dr Crystal Meehan and Prof. Kimberley Norris. I consider myself incredibly fortunate for the opportunity to have worked with such knowledgeable, supportive, and inspirational people. Together, you kept me on track, reigned me in when I got carried away, and gave me the confidence to keep moving forward. Most importantly, you kept me laughing through it all. Thank you for all that you have done for me this year.

Thank you to all my and friends for your love and support, without you this year of twist and turns would have felt impossible. My family for always being there and reminding me to leave my desk once and a while. Bradie for offering insights, an irreplaceable friendship, and keeping me entertained. To my friends Ava and Cherelda for lovingly and patiently waiting for me to come back out to play. My work colleagues, who cheered me on and kept me fed. And my fellow honours students, Breanna and Esther, our socially distant friendship was invaluable, and I am glad to have shared this journey with you.

I would like to thank the animal care organisations and professionals who generously gave their time to make this project possible. I feel privileged to have worked with such a compassionate and dedicated group of people. The work you do is remarkable.

And finally, Annie. The most judgmental, demanding, and loving dog I know. You will never read this, but I am thankful for having you to keep me company all the way through this adventure.

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Resilience in Animal Care Professions: Does the Stress Shield Model Fit?

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Word Count: 9,772

Abstract

Animal care professionals can experience adverse psychological outcomes due to their work, therefore research exploring supporting resilience in this population is needed. This study investigated the capacity of the Stress Shield Model to explain relationships between individual, interpersonal, and organisational factors with outcomes in resilience and adaptive capacity in animal care professionals. Empowerment was hypothesised to mediate these relationships. Australian and New Zealand participants (N = 393) from multiple animal care occupations completed an online survey measuring conscientiousness, coping, team and leader relationships, job demands, organisational resources, growth, resilience, and job satisfaction. Results indicated the Stress Shield Model can partially explain relationships between individual, interpersonal, and organisational factors and resilience and adaptive capacity in animal care professionals, and empowerment partially mediated the effect of organisational resources on growth. Problem-approach coping positively precited resilience and growth; conversely, emotion-avoidant coping negatively precited these outcomes. Conscientiousness positively predicted resilience and negatively predicted job satisfaction. Team relationships positively predicted growth and resilience, while leader-member relationships positively predicted job satisfaction. Organisational resources positively predicted resilience, growth, and job satisfaction, conversely job demands predicted reductions across these outcomes. Findings indicate supporting resilience and adaptive capacity in animal care professionals requires fostering individual, interpersonal, and organisational resources.

Animal care professionals care for and maintain the wellbeing of animals. The occupations within this industry are diverse, including veterinarians, veterinary nurses and technicians, animal attendants, kennel hands, wildlife carers, zookeepers, and laboratory animal technicians. Animal care professionals experience high workloads in fast-paced environments, encounter emergency situations, and face high variability and complexity between cases (Kimber & Gardner, 2016; Polachek & Wallace, 2018). Often an under-resourced industry, employees can work long hours and be on-call after business hours, with low wages (Englefield et al., 2019; Moir & Van den Brink, 2020). These occupations place staff at risk of injury from animals, exposure to harmful substances, and chronic physical pains from handling of animals (van Soest & Fritschi, 2004). Such occupational stressors can be further exacerbated by the emotional labour in witnessing animal suffering and death, and the grief of humans who have formed attachments to the impacted animals (Deacon & Brough, 2019; Polachek & Wallace, 2018). The physical and emotional stressors faced by animal care professionals are usually essential to their role and therefore unavoidable, placing them at increased risk of experiencing distress and poor psychological health outcomes (Hill et al., 2020; Rogelberg et al., 2007). Such outcomes include, but are not limited to, compassion fatigue and burnout (Monaghan et al., 2020; Polachek & Wallace, 2018), depression, suicide, and symptoms of traumatic stress (Gardner & Hini, 2006; Rohlf & Bennett, 2005). Understanding the workplace and individual factors protecting animal care workers from such adverse outcomes is therefore essential. Furthermore, expanding knowledge on the factors predicting wellbeing and resilience will assist in the development of targeted workplace interventions in the context of animal care professions.

Costs and Benefits of Caring

Animal care professionals often enter this industry out of a desire to care for and promote animal welfare (Rohlf & Bennett, 2005). This desire can result in staff willingness to

accept low pay, volunteer their time, work long hours, and use personal finances (e.g. food and veterinary bills) to ensure animal care needs are met (Englefield et al., 2019; Hoy et al., 2010). Many animal care professionals report working with animals as 'a dream come true' (Hill et al., 2020). Therefore, it is not surprising compassion satisfaction, a sense of reward and gratification from caring, has been identified in those who bond and connect with animals in their charge (LaFollette et al., 2020; Scotney et al., 2019). Employees given opportunities to nurture animals in their care are more likely to experience positive emotions, which may assist in negating some of the negative experiences (Scotney et al., 2019).

Many animal care professionals will also be exposed to cruelty, neglect, pain, and death of animals, despite efforts and desires to heal and rehabilitate (Deacon & Brough, 2019; Rohlf & Bennett, 2005). Repeated exposure to animal suffering alongside expressions of compassion and empathy can result in compassion fatigue, a state of emotional exhaustion (Figley & Roop, 2006; Polachek & Wallace, 2018). Interactions with human owners of unwell pets is another source of stress, as an owner's grief, unrealistic expectations, anger, refusal to pay or follow best-practice treatment can increase emotional and empathetic burden (Deacon & Brough, 2019; Polachek & Wallace, 2018). Death or illness of an animal in care can be difficult, particularly when a human-animal bond has been formed (LaFollette et al., 2020; Waters et al., 2019). Death may be a result of euthanasia which can be performed for a variety of reasons, such as on compassionate grounds to end suffering (Von Dietze & Gardner, 2014), at completion of laboratory studies (LaFollette et al., 2020), or due to a human client's financial situation or unwillingness to treat (Deacon & Brough, 2019). The cause of animal death can influence the emotional reactions of animal care professionals; for example, euthanasia can contribute to psychological distress, secondary traumatic symptoms, and moral stress (Deacon & Brough, 2019; Rohlf & Bennett, 2005). Moral stress occurs when animal care professionals perform euthanasia or treatments conflicting with their values

and morals regarding animal care (Rohlf & Bennett, 2005). Conversely, death can also engender compassion satisfaction, as animal carers recognise the privilege in easing pain and being there during the final moments of an animal's life (Deacon & Brough, 2019).

Many of these experiences are not unlike those of first responders and health care workers such as police, medical staff, paramedics, and fire fighters who are often exposed to physical and emotional stressors, increasing the risk of adverse psychological outcomes (Paton et al., 2012; Pietrantoni & Prati, 2008). Health care professionals and first responders encounter injury and death of others, face risk of physical harm (Kleim & Westphal, 2011), and undergo emotional labour in providing care and compassion (Delgadoa et al., 2017). Comparable to animal care professionals, human care providers are found to experience compassion fatigue, burnout, depression, high suicide rates, and symptoms of traumatic stress (Jones, 2017; McCann, 2013; Pietrantoni & Prati, 2008; Yates et al., 2012). Despite the occupational risks and stressors, human care providers also experience positive outcomes, such as personal growth, resilience, and job satisfaction (Burke & Paton, 2006; Pietrantoni & Prati, 2008; Shakespeare-Finch et al., 2003). The presence of resilience and adaptive growth in first responders and health care professionals suggests the possibility of promoting similar outcomes in animal care professionals. However, current research on facilitating resilience and adaptive capacity in the context of animal care has been limited (Cake et al., 2017).

Stress Shield Model

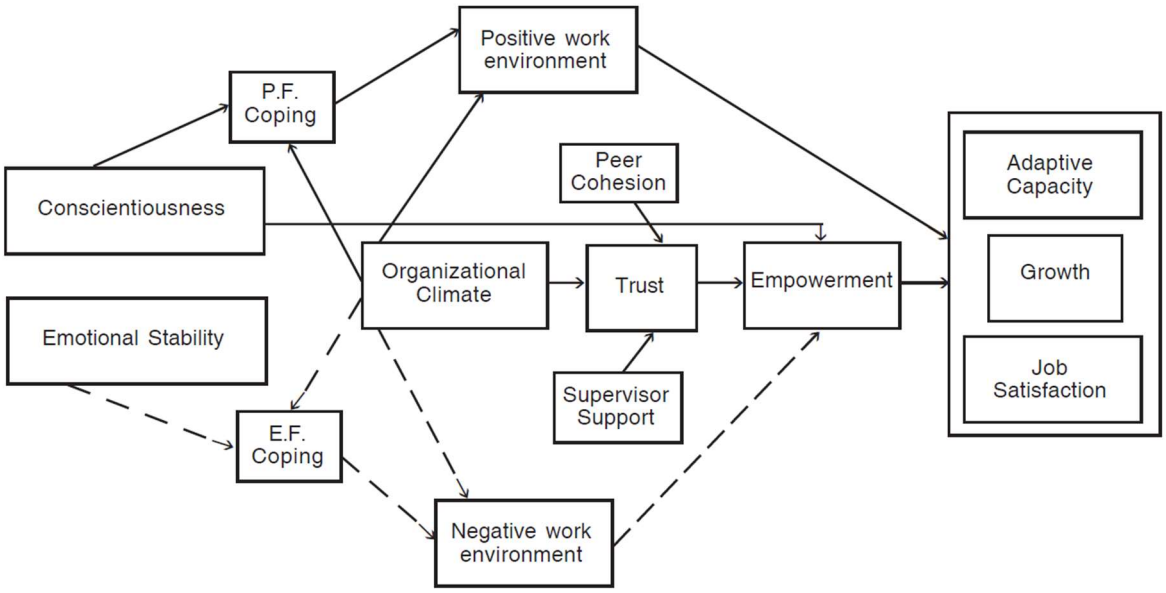
Promoting resilience and adaptive capacity in challenging work environments requires undertaking a salutogenic perspective (Paton et al., 2008). The salutogenic perspective recognises the potential for individuals to experience positive outcomes through interpretations of challenging experiences as meaningful (perceiving the situation and its resolution as serving a purpose), manageable (perception of having the capacity to utilise available resources to successfully cope), and coherent (perceiving the situation as

understandable and recognising the appropriate coping strategies required; Antonovsky, 1998). The Stress Shield Model (SSM; Paton et al., 2008) proposes an explanation of how resources and individual competencies are utilised to translate workplace challenges into meaningful, manageable, and coherent experiences.

Developed and validated in the police population, the SSM (Figure 1) describes the relationships between individual, interpersonal, and organisational resources and resilience in the workplace context (Paton et al., 2008). The SSM proposes empowerment mediates these relationships, as it enables individuals to draw upon available resources and translate workplace experiences into meaningful, coherent, and manageable experiences (Paton et al., 2008). Successful translation of experiences supports the development of schemas facilitating resilience and adaptive capacity(Paton et al., 2008). Given the similarities between the challenges encountered by first responders and animal care professionals, the SSM provides a possible explanation of, and mechanism for promoting, resilience and adaptive capacity in the animal care population.

Figure 1

The Stress Shield Model of Resilience (Paton et al., 2008)



Empowerment

Psychological empowerment is a construct comprising individual cognitions of competence (performance ability and effort expectancy), meaning (investment and alignment between personal values and tasks), self-determination (autonomy and situational control perceptions), and impact (capacity to shape and achieve goals perception; Spreitzer, 1995a; Thomas & Velthouse, 1990). Higher degrees of these dimensions promote intrinsic motivation, facilitate sustainable effort, and foster flexibility when individuals are faced with challenging situations (Thomas & Velthouse, 1990).

In the workplace context, empowerment is influenced by subjective perceptions and experiences in the work environment (Spreitzer, 1995a). Workplace psychological environments comprise individual responses, interpersonal interactions, and organisational climate (Paton et al., 2008). Together these elements create the context in which employees learn and develop empowering schemas, in turn facilitating resilience and adaptation to workplace incidents (Paton et al., 2008). For example, higher employee empowerment has

been associated with reductions in negative psychological health outcomes (Schermuly & Meyer, 2016) and increases in job satisfaction (Liden et al., 2000). As proposed by the SSM, empowerment can thus be expected to mediate relationships between individual, interpersonal, and organisational resources and resilience in animal care professionals.

Resilience

Resilience has been given various definitions. This study will draw on the description of resilience as the capacity to adapt and cope with demands and challenges by drawing on available individual, interpersonal, and organisational resources (Paton et al., 2008). Resilient individuals possess the ability to maintain and return to normal levels of functioning, with minimal or transient disruption following highly stressful or traumatic events (Bonanno, 2008). Periods of disruption reflect psychological disequilibrium, retaining wellbeing through which requires adverse situations to be cognitively re-organised into experiences that are meaningful, coherent, and manageable (Antonovsky, 1996; Paton et al., 2012)

In line with this concept, resilience has been found to negatively correlate with levels of burnout and compassion fatigue, and positively correlate with compassion satisfaction in first responders and health professionals (Burnett & Wahl, 2015). Such findings suggest resilience alleviates adverse outcomes, as resilient employees have greater capacity to manage and adapt to their experiences (Burnett & Wahl, 2015). Additionally, resilience levels prior to adverse work incidents may predict development of mental health concerns. In a study with Australian firefighters exposed to serious death or injury, it was found low levels of resilience related to increases in depression and PTSD symptomology at six-month follow up (Joyce et al., 2019). As research has found animal care professionals are at risk of experiencing burnout, compassion fatigue, traumatic stress symptoms, and poor mental health (Hill et al., 2020; Monaghan et al., 2020; Rohlf & Bennett, 2005), resilience may also play an important role in protecting this population from adverse outcomes.

Growth and Adaptive Capacity

Growth is conceptualised as the development of the self beyond previous levels of functioning (Tedeschi & Calhoun, 2004). The occurrence of growth requires a catalyst, an event or work-related trauma that significantly and subjectively threatens or breaks down fundamental schemas (Rodríguez-Rey et al., 2017; Tedeschi & Calhoun, 2004). Individuals successful in re-organising and re-structuring schemas through generation of meaning and coherence of these stressful events are theorised to have experienced growth (Armeli et al., 2001; Tedeschi & Calhoun, 2004). Evidence of growth following traumatic and stressful workplace events have been reported in first responders (Arble et al., 2018; Paton, 2005) and personnel in the human health sector (Ellis & Gardner, 2018; Rodríguez-Rey et al., 2017). Many animal care professionals enter the profession from a desire to promote the health and wellbeing of animals (Rohlf & Bennett, 2005). Consequently, encounters with death and suffering of animals in their care can induce psychological strain and moral stress, as individual beliefs and views of animal care conflict with the situation (Deacon & Brough, 2019). Experiences challenging personal values and beliefs create a disruption in worldviews, in order to grow and overcome distress individuals must broaden previous interpretations and generate meaning from these experiences (Park & Fenster, 2004). Therefore, an animal care professional's capacity to generate meaning and coherence from their workplace can be anticipated to display personal growth.

Growth differs from resilience as it reflects an adaptive capacity to accommodate new information gained from significantly stressful events into schemas, resulting in a surpassing of pre-event levels of functioning (Paton et al., 2012; Tedeschi & Calhoun, 2004), whereas persons exhibiting resilience will successfully cope and assimilate challenging events into existing schemas, thus returning to previous levels of functioning (Paton et al., 2012; Tedeschi & Calhoun, 2004). As resilience and growth capture distinct processes, it is

essential to incorporate both outcomes in investigations of workplace resilience as an adaptive capacity (Paton et al., 2008). This is particularly relevant to the animal care population, as they have been identified as experiencing distress from moral conflicts in their workplace (Hill et al., 2020; Rohlf & Bennett, 2005).

Job Satisfaction

Outcomes in job satisfaction are proposed to capture experiences of manageability and meaningfulness in the workplace context (Paton et al., 2008). Additionally, such measures encompass both negative and positive features of the workplace experience (Paton et al., 2012 & Johnson). Support for this premise can be found in studies relating to work experiences and job satisfaction. In health care professionals, job satisfaction has been found to positively relate to perceptions of competency in personal ability (Ellis & Gardner, 2018) and meaning in their roles (Ando & Kawano, 2018). In contrast, instances of moral conflicts (reflecting powerlessness and low manageability) relate to job dissatisfaction (Ando & Kawano, 2018). Thus, measures of job satisfaction can capture animal care professionals experience of manageability and meaning.

Parallels of meaning and satisfaction can also be seen in animal care professionals. Many animal carers report working with animals as desirable (Hill et al., 2020) and find a sense of purpose and achievement in their work (Levitt & Gezinski, 2018). Meaning and purpose has also been identified as significant source of satisfaction in veterinarians (Cake et al., 2015). Additionally, job satisfaction in animals care professionals negatively correlates with compassion fatigue and burnout, as well as positively correlates with compassion satisfaction (Hill et al., 2020; Yeung et al., 2017), suggesting intrinsic reward from engaging in meaningful work may act as a protector from experiencing negative outcomes (Hill et al., 2020). These preliminary findings in animals care professionals indicate meaning and manageability may heighten job satisfaction.

Individual Personality and Coping

In the SSM, the personality trait conscientiousness is suggested to relate to empowerment, as individuals displaying this trait are more likely to appraise themselves as having the competence to meet challenges, apply commitment, and exert effort toward overcoming difficult situations (Bartley & Roesch, 2011; Gartland et al., 2012; Penley & Tomaka, 2002). Through such appraisals, they can derive a sense of competency and meaning from workplace interactions and experiences (Paton et al., 2008; Thomas & Velthouse, 1990). In a sample of employees from various industries, conscientiousness positively related to empowerment, and greater perceptions of ability to perform tasks (Yazdi & Mustamil, 2015). Additionally, higher conscientiousness reflects tendencies toward goal setting, self-improvement, and achievement expectancies (Judge & Ilies, 2002; Paton et al., 2012). These qualities are believed to explain the positive relationships found between conscientiousness and resilience (Froutan et al., 2017; Gupta et al., 2012) and growth (Shakespeare-Finch et al., 2005) in first responders. Furthermore, a positive relationship between conscientiousness and job satisfaction has been found in a meta-analysis (Judge et al., 2002b). Thus, higher conscientiousness in animal care professionals can be expected to predict increases in empowerment, resilience, growth, and job satisfaction.

Another individual factor considered in the SSM is the use of coping strategies. Coping strategies involve initiation of effort to reduce or prevent distress resulting from subjectively stressful experiences (Carver & Connor-Smith, 2010). Previous studies commonly distinguish coping between ‘problem-focused’ and ‘emotion-focused’ styles (Lazarus & Folkman, 1984). Emotion-focused coping includes cognitive reappraisals, avoidance, and disengagement from stressors (Lazarus & Folkman, 1984). In animal care professionals this may display as emotionally distancing from animals in their charge and venting their emotions to others (Baran et al., 2009). Emotion-focused coping is proposed to

be adaptive in response to uncontrollable situations (Folkman & Moskowitz, 2004). However, it can result in disempowerment due to inaction, reinforcing perceptions of lacking impact, choice, and competency (Thomas & Velthouse, 1990). Conversely, problem-focused copying involves approaching problems, generating solutions, and taking action to improve situations (Lazarus & Folkman, 1984). For example, animal care professionals may develop technical skills and knowledge to improve animal wellbeing outcomes (Baran et al., 2009; Von Dietze & Gardner, 2014). Emotion-focused coping has been found detrimental to growth and wellbeing, whilst problem-focused coping appears to promote adaptation and resilience (Arble et al., 2018; Balmer et al., 2014). Hence, it is expected animal care professionals utilising problem-focused coping strategies will display higher empowerment and resilience outcomes, whereas emotion-focused coping will likely have an opposing effect.

Organisational Climate

The organisational climate captures the context in which workplace challenges and consequences are experienced and understood (Paton et al., 2008), shaping employee expectations and normalising behavioural and emotional stress responses (Ashforth & Kreiner, 2002). Workplace interactions and consequences reinforce behaviours and guide development of challenge appraisal schemas and resourcefulness (Paton et al., 2008; Thomas & Velthouse, 1990). Additionally, availability of organisational resources such as sufficient time, information, and materials, allow employees the capacity to perform job tasks and control their environment (Spreitzer, 1995b). Workplace environments providing opportunities to control and select behaviour are likely to empower employees, more so than environments perceived as constraining choice (Spreitzer, 1995b). Previous studies in the animal carer populations have supported this proposition with increasing job control and organisational resources associated with reductions in burnout, exhaustion, and psychological distress, along with increases in work engagement (Black et al., 2011; Kimber & Gardner,

2016). Other resources, such as environments supporting processing of emotions and encouraging learning are also regarded as valuable sources of coping by animal care professionals (Waters et al., 2019). These findings support predictions of the SSM, where availability of organisational resources is expected to predict increasing empowerment and outcomes in resilience. However, many animal care professionals perceive limited control of workloads (Lloyd & Campion, 2017), choice of animal treatment (Moses & Malowney, 2018; Von Dietze & Gardner, 2014), and time to process emotions following distressing events (Deacon & Brough, 2019).

High job demands and time pressures to perform multiple duties in animal care contexts can increase the risk of mistakes, potentially resulting in injuries and death of animals and creating further distress for animal care professionals (Deacon & Brough, 2017; White, 2018). Workplace demands include critical incidents and daily hassles (routine job tasks), the accumulation and increasing frequency of which has been found to increase first responder vulnerability to experiencing adverse reactions to critical events, lessen their ability to generate meaning from experiences, and lead to negative psychological symptoms (Larsson et al., 2016). In the context of animal care professionals, perceptions of high job demands have been associated with low job satisfaction and burnout (Black et al., 2011). Whilst resource availability empowers employees, increasing demands and barriers foster powerlessness (Paton et al., 2008). Therefore, availability of organisational resources and reduction of job demands can be expected to predict increases in empowerment and resilience outcomes in animal care professionals.

Relationships with Team Leaders and Members

Team members and leaders provide another valuable source of support in challenging work environments. Leaders possessing high quality relationships with their teams can facilitate cultures of learning, trust, and respect (Graen & Novak, 1982; Paton et al., 2008).

Leaders are also able to translate organisational values, provide direction, and give feedback to reinforce desirable schemas of meaningfulness and manageability (Spreitzer, 1995a; Thomas & Velthouse, 1990). Recognition from leaders and team members informs individuals of their contribution and impact to the overall workplace (Spreitzer, 1995a). Furthermore, positive relationships promote knowledge sharing and assistance with skill development, subsequently developing employee competency (Paton et al., 2008; Seers, 1989). Support for these theories has been found in animal care professionals, who have reported collegial support and sharing experiences as important in making sense of loss and challenges (Scotney, 2017; Waters et al., 2019).

Workplace support may be of additional value in the animal care context, as animal care professionals have expressed difficulty in accessing support outside of the workplace due to the general public's negative perceptions of animal research and euthanasia (Black et al., 2011; Von Dietze & Gardner, 2014). Cooperative animal care teams displaying trust, respect, and belonging can moderate the effects of empathic concern, and increase job satisfaction and compassion satisfaction (Moore et al., 2014; Pizzolon et al., 2019). In contrast, perceived lack of support and toxic teams increase ratings of burnout, psychological distress, and low job satisfaction (Black et al., 2011; Pizzolon et al., 2019). Therefore, quality relationships with leaders and teams can be expected to increase empowerment and resilience in animal care professionals.

Rationale and Hypotheses

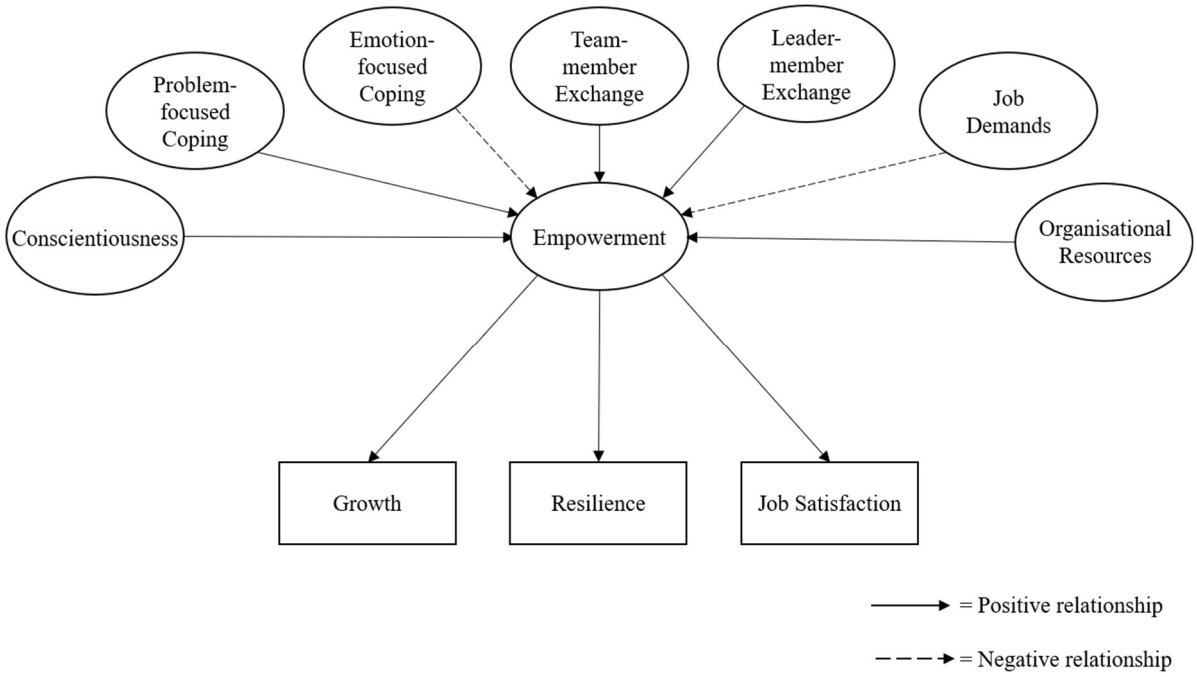
Animal care professionals are exposed to inevitable but significant emotional and physical stressors in their line of work (Rohlf, 2018). Exposure to these stressors place this population at risk for developing negative outcomes such as depression, burnout, compassion fatigue, symptoms of traumatic stress, and risk of suicide (Hansez et al., 2008; Hill et al., 2020; Rohlf & Bennett, 2005). To date, research in animal care professions has focused on

these pathological outcomes, with few studies examining resilience or promotion of positive outcomes (Cake et al., 2017; Rohlf, 2018). Research has also predominantly taken place outside of Australia and New Zealand. Further, the majority of research has examined personnel in veterinarian services, with few investigating the experiences zookeepers, animal research technicians, animal rescuers or wildlife cares. This is an important issue as the need for animal rescue and rehabilitation services will likely increase as human made threats (Englefield et al., 2019) and risk of natural disasters such as the 2019-2020 Australian bushfires (estimated to impact over 1 billion animals) continue to grow (University of Sydney, 2020).

The current research aimed to investigate the factors facilitating resilience and adaptive capacity in animal care professionals from a salutogenic perspective. The study explored the potential of the SSM to explain the relationship between outcomes in adaptive capacity and resilience and the individual, interpersonal, and organisational factors in the context of animal care professions. Based on previous findings in human service providers, it was anticipated conscientiousness, problem-focused coping, high quality team and leader exchanges, and organisational resources factors would correlate positively with outcomes in resilience, job satisfaction, growth, and empowerment. In contrast, increases in emotion-focused coping and job demands were expected to have a negative relationship with outcomes in resilience and empowerment. Additionally, it was anticipated that empowerment would mediate the relationship between predictive variables and outcomes (Figure 2).

Figure 2

Hypothesised mediation model of predictors and outcomes



Method

Participants

Participants were recruited via email invitations, website enquiries, and social media advertisements shared with Australian and New Zealand organisations and individuals involved in the health and wellbeing of animals (Appendix A). Eligible participants were aged 18 years and older, residing in Australia or New Zealand, and were either currently or previously employed as a paid employee or volunteer in animal care services.

A minimum of 110 participants were required to detect a medium effect size with a power of .80 (Green, 1991). The survey was accessed and submitted by a total 716 participants, of which 318 surveys were fully completed. Participants residing outside of Australia and New Zealand or missing more than 20 percent of total responses (Dong & Peng, 2013) were excluded. Final analyses included 393 participants. Summary of participant demographics can be found in Table 1. Occupation categorised as ‘other’ included staff

involved directly in animal treatment and handling (e.g. foster carers), or as administrative support and training (e.g. volunteer coordinators). Current workplace classified as 'other' included participant responses such as working from home, within universities, or speciality clinics.

Table 1

Participant Demographic Information

Variable	*N* (%)
Country of residency	
Australia	331 (84)
New Zealand	62 (16)
Age in Years	
18 – 24	36 (9)
25 – 34	152 (39)
35 – 44	99 (25)
45 – 55	60 (15)
55+	46 (12)
Gender	
Male	45 (11.5)
Female	346 (88)
Other	2 (0.5)
Current Occupation Title	
Animal Attendant/Kennel Hand	12 (3.1)
Laboratory Animal Technician	50 (12.8)
Veterinarian	86 (21.9)
Veterinary Nurse/Technician	104 (26.5)
Wildlife Carer	32 (8.2)
Zookeeper	64 (16.3)
Other	44 (11.2)
Years in Current Occupation	
Less than 2 years	31 (7.9)

Table 1 (continued)

Participant Demographic Information

Variable	*N* (%)
2 – 4 years	75 (19.2)
5 - 7 years	67 (17.1)
8 - 10 years	44 (11.3)
11 - 20 years	107 (27.4)
21 - 30 years	37 (9.5)
30+ years	30 (7.7)
Current Workplace	
Zoo or wildlife park	75 (19.1)
Research facility	56 (14.2)
Small animal veterinary practice	108 (27.5)
Large animal veterinary practice	8 (2.0)
Mixed animal veterinary practice	25 (6.4)
Emergency veterinary practice	25 (6.4)
Wildlife rescue organization	39 (9.9)
Animal rescue organization	25 (6.4)
Other	32 (8.1)
Years in Current Workplace	
Less than 2	83 (21.3)
2 - 4	114 (29.3)
5 - 7	64 (16.5)
8 - 10	44 (11.3)
11 - 20	67 (17.2)
21 - 30	10 (2.6)
30+	7 (1.8)
Current Employment Type	
Paid employee	338 (86.9)
Volunteer employee	51 (13.1)

Note. *N* = 393

Measures

The Brief COPE (BCOPE; Carver, 1997) measured frequency of coping strategies used during stressful situations and consists of 14 subscales of 2 items each, on a 4-point scale from 1 (‘I haven’t been doing this at all’) to 4 (‘I've been doing this a lot’). Example items include “I’ve been learning to live with it” and “I’ve been giving up the attempt to cope.” Higher scores indicate greater frequency of use coping strategies. This scale has been previously found to have good internal validity (α = .86; Boals & Schuler, 2018).

The Big Five Inventory-2 (Soto & John, 2017) measured conscientiousness. Conscientiousness comprises 12 items across organisation, productiveness, and responsibility on a 5-point Likert scale ranging from 1 (disagree strongly) to 5 (agree strongly), with a maximum obtainable score of 60. Example items included “Is dependable, steady” and “Is persistent, works until the task is finished.” Higher scores indicate higher levels of the trait conscientiousness. This scale been found to have good internal validity (α = .86; Soto & John, 2017).

Team-Member Exchange (Seers et al., 1995) measured perceptions of relationships with colleagues. The measure comprises 10 items on a 5-point scale, example items include “How well do other members of your team recognise your potential?” and “In busy situations, how often do other team members ask you to help out?” Responses ranged from 1 (‘not at all’ or ‘rarely’) to 5 (‘fully’ or ‘very often’). Higher scores indicated perceptions of higher quality team-member exchanges and reciprocity. This scale has previously shown to have good internal validity (α = .83 - .84; Seers et al., 1995).

Leader-Member Exchange (Scandura & Graen, 1984) measured perceptions of working relationship and leadership efficacy between workers and their workplace leaders. The scale consists of 7 items on a 5-point scale, example items included “How well does your leader recognise your potential? (How well do you recognise)” and “How well does your

leader understand your job problems and needs? (How well do you understand).” Responses ranged from 1 (‘not at all or ‘not a bit’) to 5 (‘fully’ or ‘a great deal’). Higher scores indicate quality relationship exchanges between leaders and team members (Graen & Uhl-Bien, 1995). Scale internal validity has been acceptable when used with leader (α = .65 - .79) and team member (α = .86 - .84) populations (Graen & Novak, 1982), indicating this scale has good reliability for measuring both leaders and team member perceptions.

The Copenhagen Psychosocial Questionnaire (Pejtersen et al., 2010) subscales ‘demands at work’ (18 items) and ‘work organisation and job contents’ (17 items) were used to measure job demands and available organisational resources respectively. Items are scored on a 5-point Likert scale with anchors ranging either from ‘always’ to ‘never/hardly ever,’ or ‘to a very large extent’ and ‘to a very small extent.’ An example demands at work subscale item was “Do you have enough time for your work tasks?” Higher scores in demands at work indicated high levels of cognitive, emotional, and physical job demands. The demands at work subscale has been found to have acceptable internal reliability (Dicke et al., 2018). An example work organisation and job contents subscale item was “Can you influence the amount of work assigned to you?” Higher scores in the job contents and work organisations subscale indicate greater influence, possibilities for development, variation, meaning of work, and commitment to the workplace. The job contents and work organisations subscale has been found to have good reliability (α = .73 - .85; Dicke et al., 2018).

The Psychological Empowerment Instrument (Spreitzer, 1995a) was used to measure psychological empowerment. The scale consists of 12 items on a 7-point Likert scale across four domains: meaning, competence, self-determination, and impact. Example items included “I am confident about my ability to do my job” and “The work I do is meaningful to me.” Responses ranged from 1 (very strongly disagree) to 7 (very strongly agree). Higher scores indicate higher psychological empowerment in the context of the workplace. This scale

previously been shown to have good internal reliability (α = .73 - .85; Spreitzer, 1995a).

The Job Satisfaction Scale (Spector, 1985) measured overall job satisfaction in the current workplace. The measure consists of 36 items in nine domains: promotional opportunities, satisfaction with pay, contingent rewards, fringe benefits, co-workers, supervision, nature of work, work conditions and communication. Responses were rated on a 6-point Likert scale ranging from 1 (disagree very much) to 6 (agree very much). Example items include “Work assignments are not fully explained” and “I sometimes feel my job is meaningless.” Higher scores indicate higher overall job satisfaction. This scale has been found to have good internal reliability (α = .91; Spector, 1985).

The Revised Stress-Related Growth Scale (Boals & Schuler, 2018) is a 15-item scale used to measure changes in thoughts and behaviours following a negative event. Participants were asked to identify an event perceived as significantly negative. Sample items included “I experienced a change in the extent to which I find meaning in life.” Responses were rated on a 6-point bipolar response scale ranging from -3 (a very negative change) to +3 (a very positive change). Higher positive scores indicate personal growth following a negative event. This scale has been found to have good internal reliability (α = .93; Boals & Schuler, 2018).

The Resilience Scale for Adults (Friborg et al., 2003) measured resilience across intrapersonal (perceptions of self, planned future, social competence, and structured style) and interpersonal (family cohesion and social resources) domains. The scale consists a total of 33 items rated on a 5-point bipolar scale. An example of a bi-polar response is a range from “I am uncertain about (My abilities)” to “I strongly believe in (My abilities),” scored 1 to 5 respectively. Higher scores indicate higher levels of individual resilience. This scale has been found to have acceptable internal reliability (α = .67 - .90; Friborg et al., 2003).

Design and Analysis

This study utilised a cross-sectional, correlational design. Predictor variables included

conscientiousness (Soto & John, 2017), coping style (Carver, 1997), team relationships (Seers et al., 1995), leader relationships (Scandura & Graen, 1984), job demands (Pejtersen et al., 2010), and organisational resources (Pejtersen et al., 2010). Outcome variables comprised empowerment (Spreitzer, 1995a), job satisfaction (Spector, 1985), stress-related growth (Boals & Schuler, 2018) and resilience (Friborg et al., 2003).

A confirmatory factor analysis was performed using Jamovi to confirm the fit of BCOPE items into problem and emotion-focused coping styles, constructed on the conceptualisation of coping styles by Folkman and Lazarus (1980). This analysis was conducted due to the high variability and inconsistencies between studies in the methods of categorisations and labels of coping styles (Krägeloh, 2011; Skinner et al., 2003). Model fit measures of the CFA revealed a poor fit. Exploratory factor analyses (EFA) were then conducted and found superior model fits. Final factors were labelled problem-approach coping (PAC), emotion-avoidant coping (EAC), and social support coping (SSC). The model fit measures, EFA analysis, and EFA factor loadings are detailed in Appendix D.

Forced entry multivariate regressions were conducted in SPSS to determine if SSM explained the relationship between predictor variables (individual, team, organisational) and outcome variables (job satisfaction, growth, and adaptive capacity), and if this relationship is mediated by empowerment. Bootsrapping was performed to investigate the statistical significance of detected indirect effects.

Procedure

Ethical approval was obtained from the Tasmanian Social Sciences Human Research Ethics Committee (Appendix B). Participants accessed the online survey on LimeSurvey via the electronic link or QR code. Before commencement participants were provided an information sheet (Appendix C) outlining the purpose of the study, their anonymity and confidentiality, and the intended use of the collected data. Participants confirmed their

consent to participate by selecting a check box before entering the survey. The survey required approximately 30-45 minutes to complete. After completing the survey, participants were invited to enter the draw to receive one of six gift cards valued at AUD $50 for Australian participants or NZD $50 for New Zealand participants. An external link for those wishing to enter the draw directed participants to an external survey to provide their name and contact details, this ensured continued anonymity.

Results

Data analysis

Participants with an overall missing data rate of >20% were excluded from the analysis, due to increasing risk of bias associated with rising missing data percentages (Dong & Peng, 2013). A Little's MCAR (missing completely at random) Test was found to be non-significant ($p < .01$), indicating missing data was not MCAR. As such, missing data was decided as probable to be missing at random (MAR). To handle missing data, complete and available case analysis methods were decided as inappropriate, due to potential for bias in estimates and significant loss of participants (Pigott, 2001). Thus, Maximum Likelihood (ML) Estimation using SPSS Expectation Maximisation (EM) was conducted to replace missing values. This method is appropriate when data falls under MAR and the assumption of multivariate normality is met (Little, 1992).

Prior to conducting linear regressions, outliers were identified as participants with standardised residuals exceeding +/- 3 standard deviations. Removal of 15 outliers improved power for regression coefficients and produced superior model fits. Final analyses included 393 participants. Cook's Distance indicated absence of influential participants. Assumptions for multivariate linear regression were met. Scatter plots indicated linear relationships between independent and independent variables. Univariate and multivariate normality was explored via skew and kurtosis, histograms, Q-Q Plots and P-P plots. Following

transformation of the empowerment scale, normality of distribution was present. The assumption of homoscedasticity was met following transformation of job demands, emotion-avoidance coping, and conscientiousness. The collinearity assumption was met, as indicated by correlations coefficients (Appendix E) of less than .80. Additionally, tolerances and VIF values of regression coefficients were within acceptable ranges.

Descriptive Statistics

Total scale means, standard deviations, and internal reliabilities of the variables measured are represented in Table 3. Internal validity was acceptable for all measures, as represented by Cronbach alpha values >.70 (Bland & Altman, 1997). In comparison to general populations, means and standard deviations indicated Australian and New Zealand animal care professionals displayed above average levels of conscientiousness (Soto & John, 2017), average quality team and leader-member exchanges (Schermuly & Meyer, 2016), and average levels of resilience (Anyan et al., 2019). Mean scores also suggested minimal stress-related growth (Boals & Schuler, 2018), ambivalence in job satisfaction (Spector, 1994), and low empowerment (Spreitzer, 2019). Within this population, emotion-avoidant coping strategies overall were used less than problem-approach and social support coping strategies.

Table 2

Means, Standard Deviations, and Reliability of Measures

Variable	*M*	*SD*	*α*
Conscientiousness	49.21	6.84	.79
Coping	32.37	11.58	.86
Problem-approach	13.06	4.92	.83
Emotion-avoidant	12.67	6.63	.82
Social support	5.36	3.10	.87

Table 3 (continued)

Means, Standard Deviations, and Reliability of Measures

Variable	*M*	*SD*	α
Team-member exchange	35.40	5.52	.75
Leader-member exchange	23.76	6.74	.93
Job demands	1180.91	253.10	.88
Organisational resources	1059.11	277.36	.90
Empowerment	61.90	10.49	.88
Resilience	118.26	17.03	.88
Stress-related growth	2.09	14.09	.94
Job satisfaction	134.73	29.21	.94

Note. α = Cronbach's alpha

Forced Entry Multivariate Regression Analysis

To investigate the SSM mediation model, Baron and Kenny's (Baron & Kenny, 1986) four step method was applied using forced entry multivariate regressions. This regression approach was chosen as stepwise methods are considered less appropriate for multiple hypothesis testing and known to be problematic in creating bias (Whittingham et al., 2006). The first set of multivariate regression tested the pathway between the eight predictor variables (coping styles, conscientiousness, team and leader exchanges, job demands, and organisational resources) and empowerment as an outcome. Empowerment was then entered into regressions as a predictor to investigate pathway coefficients between the proposed mediator and each outcome (resilience, stress-related growth, and job satisfaction). This was followed by another set of regressions, entering the eight predictor variables with each of the outcome variables to test the total effects. Finally, regressions were conducted for each

outcome variable to compare the total effect (predictor variables without empowerment) and the direct effect (predictor variables with empowerment) to determine if a mediation effect was present. In this final step, only predictors significantly relating to empowerment were entered.

The first regression analysis found the predictor variables accounted for a significant 52.8% of variance in empowerment, $F(8, 384) = 55.81$, $p < .001$. Of the predictors, higher problem-approach coping (PAC), conscientiousness, and organisation were found to significantly increase empowerment. In contrast, higher emotion-avoidant coping (EAC) resulted in a statistically significant decrease in empowerment. The remaining predictors of SSC, team and leader exchanges, and job demands did not significantly influence empowerment (Table 4). These non-significant predictors were excluded from analyses of mediation and indirect effects on the outcome variables.

Table 3

Predictors Problem-approach, Emotion-avoidance, and Social Support coping, Conscientiousness, Team and Leader Exchange Quality, Job Demands, and Organisation Resources on Empowerment

						95% CI for *B*	
	B	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Constant	376.21	381.87		0.99	.33	-374.61	1127.03
Problem-Approach Coping	23.86	10.63	0.09	2.24	.03	2.95	44.76
Emotion-Avoidant Coping	-167.26	55.26	-0.13	-3.03	<.01	-275.90	-58.61
Social Support Coping	-26.41	16.97	-0.06	-1.56	.12	-59.78	6.96
Conscientiousness	0.19	0.07	0.10	2.70	.01	0.05	0.33
Team-member Exchange	9.49	9.32	0.04	1.02	.31	-8.83	27.81
Leader-member Exchange	5.43	8.57	0.03	0.63	.53	-11.43	22.28
Job Demands	-0.00	0.00	-0.02	-0.54	.59	-0.00	0.00
Organisation	2.93	0.21	0.63	13.90	<.01	2.51	3.34

Note. B = unstandardized beta coefficients, *SE B* = standard error of unstandardized beta coefficients, *β* = standardised beta coefficients, *LL* = lower limit, *UL* = upper limit.

The total effect of predictor variables on resilience significantly accounted for 39.3% of variance, $F(8, 384) = 32.75$, $p < .001$. Resilience was significantly and positively predicted by PAC, SSC, conscientiousness, team-member exchange, and organisation. Increases in EAC and job demands significantly and negatively impacted resilience. Leader-member exchange was a non-significant predictor of resilience (Table 5). Empowerment significantly predicted a positive increase of resilience, explaining 12.1% of variance, $F(1, 391) = 53.79$, $p < .001$.

To compare total and indirect effects, two regressions were conducted to compare coefficient and adjusted R^2 values of predictors of empowerment and resilience. Addition of empowerment did not significantly ($p = .47$) improve the model, with an adjusted R^2 change of 0.01%. The standardized coefficients held similar values in both models, and empowerment became non-significant (Table 6). This indicates empowerment did not mediate the relationship between the predictors and resilience.

Table 4

Empowerment, and Total Effect of Predictors on Resilience

						95% CI for *B*	
	B	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Empowerment							
$F(1, 391) = 53.79$, $p < .001$, adjusted $R^2 = .12$							
Constant	100.08	2.61		38.40	<.01	94.96	105.21
Empowerment	0.01	0.01	0.35	7.33	<.01	0.00	0.01
Total effect							
$F(8, 384) = 32.75$, $p < .001$, adjusted $R^2 = .39$							
Constant	80.94	5.74		14.10	<.01	69.65	92.23
Problem-Approach Coping	0.62	0.16	0.18	3.85	<.01	0.30	0.93
Emotion-Avoidant Coping	-5.60	0.83	-0.34	-6.75	<.01	-7.24	-3.97
Social Support Coping	0.98	0.26	0.18	3.85	<.01	0.48	1.49

Table 5 (continued)

Empowerment, and Total Effect of Predictors on Resilience

						95% CI for *B*	
	B	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Conscientiousness	0.01	0.00	0.26	6.32	<.01	0.00	0.01
Team-member Exchange	0.65	0.14	0.21	4.66	<.01	0.38	0.93
Leader-member Exchange	-0.14	0.13	-0.06	-1.10	.27	-0.40	0.11
Job Demands	-0.00	0.00	-0.11	-2.31	.02	-0.00	-0.00
Organisation	0.01	0.00	0.17	3.37	<.01	0.00	0.02

Note. B = unstandardized beta coefficients, *SE B* = standard error of unstandardized beta coefficients, *β* = standardised beta coefficients, *LL* = lower limit, *UL* = upper limit.

Table 5

Total and Direct Effects of Significant Predictors and Mediator on Resilience

						95% CI for *B*	
	B	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Total effect							
$F(4, 388) = 48.71$, $p < .001$, adjusted $R^2 = .33$							
Constant	91.34	5.16		17.69	<.01	81.19	101.49
Problem-Approach Coping	0.93	0.15	0.27	6.00	<.01	0.62	1.23
Emotion-Avoidant Coping	-5.25	0.77	-0.31	-6.85	<.01	-6.76	-3.75
Conscientiousness	0.01	0.00	0.27	6.47	<.01	0.01	0.01
Organisation	0.01	0.00	0.23	5.31	<.01	0.01	0.02
Direct effect							
$F(5, 387) = 39.02$, $p < .001$, adjusted $R^2 = .33$							
Constant	90.96	5.19		17.52	<.01	80.76	101.17

Table 6 (continued)

Total and Direct Effects of Significant Predictors and Mediator on Resilience

						95% CI for *B*	
	B	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Problem-Approach Coping	0.92	0.16	0.26	5.90	<.01	0.61	1.22
Emotion-Avoidant Coping	-5.14	0.78	-0.31	-6.57	<.01	-6.68	-3.60
Conscientiousness	0.01	0.00	0.27	6.31	<.01	0.00	0.01
Organisation	0.01	0.00	0.20	3.41	<.01	0.01	0.02
Empowerment	0.00	0.00	0.04	0.72	.47	-0.00	0.00

Note. *B* = unstandardized beta coefficients, *SE B* = standard error of unstandardized beta coefficients, *β* = standardised beta coefficients, *LL* = lower limit, *UL* = upper limit.

Predictors were found to significantly account for 19.8% of variance in stress-related growth, $F(8, 384) = 13.09$, $p < .001$. Team-member exchange, PAC, and organisation significantly and positively predicted increases of stress-related growth, whereas increases in EAC and job demands had a significant and negative influence on stress-related growth. SSC, conscientiousness, and leader-member exchanges were not significant predictors of stress-related growth (Table 7). Empowerment explained a significant increase in stress-related growth, explaining 11.8% of variance, $F(1, 391) = 53.43$, $p < .001$.

A comparison of total and indirect effects of the significant predictors of empowerment and stress related growth revealed a significant ($p = .02$) difference between models, with an 0.01% increase in explained variance. Slight changes in the predictor coefficients indicated empowerment partially mediated the effect on stress-related growth (Table 8).

Bootstrapping set at 5000 replications was performed to test significance of indirect effects (Preacher & Hayes, 2008). This method was chosen due to its increased power compared to the Sobel Test (Preacher & Hayes, 2004), which is conservative and requires large sample sizes (>500) to detect small effects (MacKinnon et al., 2002). Confidence intervals set at alpha .05 were applied to detect statistical significance, scales were transformed into z-scores prior to analysis. Results found indirect effects of conscientiousness ($B = 0.01$, 95%CI[0.00, 0.04]), PAC ($B = 0.01$, 95%CI[-0.00, 0.04]), and EAC ($B = 0.01$, 95%CI[-0.00, 0.04]) were non-significant. The indirect effect of organisational resources was found significantly and positively related to increases in stress-related growth via empowerment ($B = 0.10$, 95%CI[0.01, 0.20]).

Table 6

Empowerment, and Total Effect of Predictors on Stress-related Growth

						95% CI for *B*	
	B	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Empowerment							
$F(1, 391) = 53.43$, $p < .001$, adjusted $R^2 = .12$							
Constant	-12.91	2.16		-5.98	<.01	-17.15	-8.67
Empowerment	<0.01	<0.01	0.35	7.31	<.01	0.00	0.00
Total effect							
$F(8, 384) = 13.09$, $p < .001$, adjusted $R^2 = .20$							
Constant	-12.70	5.46		-2.32	.02	-23.44	-1.96
Problem-Approach Coping	0.30	0.15	0.11	1.99	.05	0.00	0.60
Emotion-Avoidant Coping	-2.54	0.79	-0.18	-3.21	<.01	-4.09	-0.99
Social Support Coping	0.36	0.24	0.08	1.49	.14	-0.12	0.84

Table 7 (continued)

Empowerment, and Total Effect of Predictors on Stress-related Growth

						95% CI for *B*	
	B	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Conscientiousness	0.00	0.00	-0.05	-1.10	.27	-0.00	0.00
Team-member Exchange	0.29	0.13	0.11	2.14	.03	0.02	0.55
Leader-member Exchange	0.21	0.12	0.10	1.70	.09	-0.03	0.45
Job Demands	-0.00	0.00	-0.14	-2.69	.01	-0.00	0.00
Organisation	0.01	0.00	0.19	3.22	<.01	0.00	0.02

Note. *B* = unstandardized beta coefficients, *SE B* = standard error of unstandardized beta coefficients, *β* = standardised beta coefficients, *LL* = lower limit, *UL* = upper limit.

Table 7

Total and Direct Effects of Significant Predictors and Mediator on Stress-related Growth

						95% CI for *B*	
	B	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Total effect							
$F(4, 388) = 19.63$, $p < .001$, adjusted $R^2 = .16$							
Constant	-6.43	4.78		-1.35	.18	-15.82	2.96
Problem-Approach Coping	0.45	0.14	0.16	3.12	<.01	0.17	0.73
Emotion-Avoidant Coping	-3.03	0.71	-0.22	-4.27	<.001	-4.42	-1.63
Conscientiousness	-0.00	0.00	-0.04	-0.94	.35	-0.00	0.00
Organisation	0.01	0.00	0.29	5.90	<.001	0.01	0.02
Direct effect							
$F(5, 387) = 16.90$, $p < .001$, adjusted $R^2 = .17$							
Constant	-7.51	4.77		-1.57	.12	-16.89	1.88

Table 8 (continued)

Total and Direct Effects of Significant Predictors and Mediator on Stress-related Growth

						95% CI for *B*	
	B	*SE B*	*β*	*t*	*p*	*B*	*SE B*
Problem-Approach Coping	0.42	0.14	0.14	2.90	<.01	0.13	0.70
Emotion-Avoidant Coping	-2.70	0.72	-0.20	-3.75	<.001	-4.12	-1.29
Conscientiousness	-0.00	0.00	-0.06	-1.25	.21	-0.00	0.00
Organisation	0.01	0.00	0.19	2.83	<.01	0.00	0.02
Empowerment	0.00	0.00	0.15	2.27	.02	0.00	0.00

Note. *B* = unstandardized beta coefficients, *SE B* = standard error of unstandardized beta coefficients, *β* = standardised beta coefficients, *LL* = lower limit, *UL* = upper limit.

The total effect of predictors on job satisfaction found a significant variance of 66.9%, $F(8, 384) = 99.81$, $p < .001$. Increases in leader-member exchange and organisation significantly and positively predicted increases in job satisfaction, whereas higher conscientiousness and job demands significantly predicted decreases in job satisfaction. Dimensions of coping styles and team exchanges did not significantly influence job satisfaction (Table 9). Empowerment significantly predicted an increase in job satisfaction, accounting for 18.7% variance, $F(1, 391) = 90.97$, $p < .001$.

Comparison between the total and indirect effects of significant predictors of empowerment and job satisfaction found a non-significant ($p = .17$) change between models, with an increase in explained variance by <0.01%. Coefficients held similar values, and empowerment was found to be a non-significant predictor (Table 10). This indicates empowerment did not mediate relationships between predictors and job satisfaction.

Table 8

Empowerment and Total Effect of Predictors on Job Satisfaction

						95% CI for *B*	
	B	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Empowerment							
$F(1, 391) = 90.97$, $p < .001$, adjusted $R^2 = .19$							
Constant	95.78	4.29		22.31	<.01	87.34	104.22
Empowerment	0.01	0.00	0.43	9.54	<.01	0.01	0.01
Total effect							
$F(8, 384) = 99.81$, $p < .001$, adjusted $R^2 = .67$							
Constant	69.76	7.28		9.58	<.01	55.45	84.07
Problem-Approach Coping	-0.00	0.20	-0.00	-0.00	1.00	-0.40	0.40
Emotion-Avoidant Coping	0.22	1.05	0.01	0.21	.83	-1.85	2.29
Social Support Coping	0.28	0.32	0.03	0.88	.38	-0.35	0.92

Table 9 (continued)

Empowerment and Total Effect of Predictors on Job Satisfaction

						95% CI for *B*	
	B	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Conscientiousness	-0.00	0.00	-0.06	-2.13	.03	-0.01	-0.00
Team-member Exchange	0.15	0.18	0.03	0.84	.40	-0.20	0.50
Leader-member Exchange	1.74	0.16	0.40	10.65	<.01	1.42	2.06
Job Demands	-0.00	0.00	-0.30	-8.98	<.01	-0.00	-0.00
Organisation	0.04	0.00	0.41	10.70	<.01	0.04	0.05

Note. *B* = unstandardized beta coefficients, *SE B* = standard error of unstandardized beta coefficients, *β* = standardised beta coefficients, *LL* = lower limit, *UL* = upper limit.

Table 9

Total and Direct Effects of Significant Predictors and Mediator on Job Satisfaction

						95% CI for *B*	
	B	*SE B*	*β*	*t*	*p*	*LL*	*UL*
Total effect							
$F(4, 388) = 76.46$, $p < .001$, adjusted $R^2 = .44$							
Constant	82.53	8.12		10.17	<.01	66.57	98.48
Problem-Approach Coping	0.24	0.24	0.04	0.98	.33	-0.24	0.72
Emotion-Avoidant Coping	-3.77	1.20	-0.13	-3.13	<.01	-6.13	-1.40
Conscientiousness	-0.00	0.00	-0.07	-1.76	.08	-0.01	0.00
Organisation	0.07	0.00	0.62	15.69	<.001	0.06	0.07
Direct effect							
$F(5, 387) = 61.68$, $p < .001$, adjusted $R^2 = .44$							
Constant	83.63	8.15		10.27	<.001	67.61	99.65

Table 10 (continued)

Total and Direct Effects of Significant Predictors and Mediator on Job Satisfaction

						95% CI for *B*	
	B	*SE B*	*β*	*t*	*p*	*B*	*SE B*
Problem-Approach Coping	0.27	0.24	0.05	1.11	.27	-0.21	0.75
Emotion-Avoidant Coping	-4.10	1.23	-0.14	-3.34	<.001	-6.52	-1.69
Conscientiousness	-0.00	0.00	-0.06	-1.55	.12	-0.01	0.00
Organisation	0.07	0.01	0.67	12.48	<.001	0.06	0.08
Empowerment	-0.00	0.00	-0.08	-1.37	.17	-0.00	0.00

Note. *B* = unstandardized beta coefficients, *SE B* = standard error of unstandardized beta coefficients, *β* = standardised beta coefficients, *LL* = lower limit, *UL* = upper limit.

Discussion

The aim of this study was to investigate the potential for the Stress Shield Model (SSM) to explain relationships between individual, interpersonal, and organisational factors and outcomes in resilience, job satisfaction, and adaptive capacity in animal care professionals. In addition, this study aimed to the investigate psychological empowerment as the mechanism facilitating individuals to draw upon resources and experience positive outcomes. In line with the SSM, hypothesis one predicted problem-focused coping, high quality team and leader relationships, and organisation resources would positively relate to outcomes in empowerment, resilience, growth, and job satisfaction, whereas emotion-focused coping and high demands would negatively relate to these same outcomes. The second hypothesis predicted empowerment would mediate these relationships. Both hypotheses were partially supported.

Individual Factors

The positive relationship of conscientiousness with resilience was in the expected direction. Individuals higher in the personality trait conscientiousness are more likely to view difficulties as manageable challenges to overcome and maintain persistence in achieving goals when faced by obstacles (Gartland et al., 2012; Penley & Tomaka, 2002). The positive relationship of conscientiousness with resilience found in the present study is consistent with the SSM and has also been demonstrated in paramedic populations (Froutan et al., 2017), police (Gupta et al., 2012), and identified a in meta-analysis of mixed (student, working, clinical, and general) populations (Oshio et al., 2018). However, the negative relationship with job satisfaction was not anticipated. Though the effect was small, it is contrary to both the SSM and earlier research findings of conscientiousness as a positive predictor of satisfaction in meta-analysis (Judge et al., 2002b). High conscientiousness has been previously related to perfectionism and high expectations of self and others, such that when

expectations are not met by the environment individuals are less likely to experience satisfaction in their occupations (Carter et al., 2016; Vogelvang et al., 2014). Animal care professionals have been known to encounter moral stress as personal values and expectations toward animal care are contradicted (Rohlf & Bennett, 2005), such unmet personal expectations may create additional vulnerability in highly conscientious animal carers to become dissatisfied with their work.

The trait conscientiousness is believed to facilitate growth due to tendencies to anticipate positive outcomes, take responsibility, and hold ambitions toward improvement and achievement (Paton et al., 2012). Increasing levels of conscientious have previously been found to correlate positively with growth following traumatic events in Australian ambulance personnel (Shakespeare-Finch et al., 2005). However, the present study found conscientiousness contributed to a non-significant negative change in stress-related growth. These findings are not unusual, as research in human health care providers also revealed a non-significant negative relationship (Ellis & Gardner, 2018). The inconsistency in findings between different occupations suggests other workplace factors may be moderating outcomes. It is possible given the nature of animal care services and their unique experiences with uncontrollable situations of animal pain and death (Hill et al., 2020), other dispositions such as positive affect and acceptance of emotions would be more influential than tendencies toward self-control and goal achievement in this population (Baran et al., 2009; Tedeschi & Calhoun, 2004).

Problem-approach coping styles were found to positively correlate with resilience and stress-related growth, whilst emotion-avoidant styles were negatively correlated. These findings were as expected of the SSM, as resilience and growth require assimilation and accommodation of schemas following disruption to existing schemas (Paton et al., 2012). Due to the various methods used to categorise coping strategies in research (Krägeloh, 2011)

comparison with findings in earlier studies is somewhat limited. However, this study's findings resemble overall patterns of coping and adaptation in previous research, where strategies focused on avoiding the source of stressor and alleviating distressing emotions are detrimental to wellbeing, whilst reappraisal and problem-solving promote adaptation (Arble et al., 2018; Carver & Connor-Smith, 2010). Animal care professionals actively engaging with sources of stress and reappraising adverse situations may be more likely to experience resilience and growth, whilst disengagement and withdrawal may result in a decrease in these outcomes. Although emotional and disengagement coping strategies are believed to be adaptive during uncontrollable situations (Folkman & Moskowitz, 2004), findings from this study suggested that overall use of such strategies reduce adaptive capacity.

Social support coping's positive relationship with resilience was not surprising, as resilient individuals are able to draw on supportive relationships with family and friends for support (Friborg et al., 2003). The lack of relationship with stress-related growth was contrary to earlier research (Arble et al., 2018; Park & Fenster, 2004). This may be due to lacking quality in social relationships, as it is quality rather than the presence of social supports that aids growth (Paton, 2005). As reported by animal laboratory technicians and veterinarian staff, public perceptions on animal care and euthanasia can deter discussion of distressing events outside of the workplace (Black et al., 2011; LaFollette et al., 2020), as such this population may not be receiving high quality social exchanges required for growth. Due to the nature of their work, quality team relationships within the workplace may be more valuable for animal care professional's ability to generate meaning and manage adverse events.

Interpersonal Factors

As described by the SSM, the current study found quality team relationships predicted increases in growth and resilience. Animal care professionals have previously identified

support from their teams as beneficial in processing difficult experiences and loss (Scotney, 2017; Waters et al., 2019). Sharing stressors and emotions with others assists in generating a sense of meaning, widening coping skills, and supporting individual self-efficacy (Lyons et al., 1998). Colleagues also shape the way in which events are evaluated and classified as either positive or negative, normalising emotional and behavioural responses (Ashforth & Kreiner, 2002). Furthermore, when responsibility for resolution and acceptance of challenges are shared, the individual burden is lessened (Paton, 2005). This contrasts well with research of toxic team environments in veterinary staff, which were found to correlate with increases in burnout, psychological distress, and exhaustion (Black et al., 2011; Moore et al., 2014). Combined with findings from the present study, this indicates team relationships may promote resilience and growth, as well as protect from outcomes in burnout and distress in animal care professionals. As such, workplace interventions fostering team cooperation and reciprocal relationships between colleagues may support adaptive coping when faced with adverse incidences in the animal care context.

While team relationships predicted positive increases in growth and resilience, the current study found relationship quality between leaders and team members did not predict changes in these outcomes. This result was not consist with the SSM or anticipated, as sharing distressing information and seeking support has been previously found to occur when subordinates perceive a high quality and reciprocal relationship with their leaders (Heffren & Hausdorf, 2014). It is possible animal care professionals have a greater preference to seek support from workplace peers over their supervisor when coping with distressing events, as indicated by studies in the police context (Heffren & Hausdorf, 2014). This may be due to animal care professionals perceiving negative repercussions and fearing consequences of using supervisors as a resource and disclosing distress (Heffren & Hausdorf, 2014; Spreitzer, 1995b). The present study also found leader-member relationships positively predicted

increases in job satisfaction. This finding aligns with the SSM and is similar to earlier research where confidence in leaders and staff members related to increased satisfaction in human health care organisations (Ellis & Gardner, 2018), and has been identified as a predictor of job satisfaction in a meta-analysis (Banks et al., 2014). Workplace leaders support their subordinates in generating perceptions of meaningfulness and self-determination (Schermuly & Meyer, 2016) through provision of opportunities to develop skills and translation of organisational values into shared goals (Paton et al., 2008; Spreitzer, 1995a). Developing high quality relationships between supervisors and employees may facilitate job satisfaction in animal care professionals, through the cultivation of shared workplace values and goals.

Organisational Factors

Organisational resources positively predicted increases in resilience, growth, and job satisfaction. Conversely, increasing job demands predicted decreases in resilience, growth, and job satisfaction. All relationships functioned in the anticipated directions posited by the SSM. These findings supported the position of Paton et al. (2008) that organisation climate is the context in which stressors and adaptation are experienced, and as such will have the most influence on outcomes in the SSM of resilience. Organisations guide expectations and normalise behaviours and emotional responses of their staff (Ashforth & Kreiner, 2002), shaping schemas on stressor appraisal and future adaptive capacity (Thomas & Velthouse, 1990). Findings from the current study are comparable to previous research examining the balance between job demands and resources in animal care services. Increasing job demands have been associated with increased risk of animal care professionals experiencing pathological outcomes, such as compassion fatigue, burnout, and emotional exhaustion (Kimber & Gardner, 2016; Monaghan et al., 2020). Veterinary staff have noted high work pace limits opportunities to process emotionally salient or distressing interactions, resulting in

reliance on emotional suppression to continue with work tasks (Deacon & Brough, 2019). This emotional suppression can cause further harm, as it reduces experiences of positive affect and increases demand on cognitive resources, in turn impairing memory of the event (Gross, 2002). High workloads and demanding environments have also been identified as increasing risk of making potentially fatal errors, thus endangering animal care professionals to experience further distress (Deacon & Brough, 2019; White, 2018). Availability of resources has an opposing effect, lowering exhaustion and improving work engagement (Kimber & Gardner, 2016). Greater control over environments reduce perceptions of workplace restrictions and fosters competency and capacity to complete work tasks (Spreitzer, 1995b). Additionally, organisations supporting individual training, development, and workplace control can encourage employees to utilise problem-solving coping strategies over emotion mitigation strategies, resulting in more positive work experiences and improved wellbeing (Arble et al., 2018; Burke & Paton, 2006). Opportunities to improve technical skills have also been identified as highly valuable for animal care professionals as it restores confidence in competency following complications or adverse outcomes during animal care (White, 2018). Combined with findings from this study, it can be argued that workplace interventions and preventions targeting staff workload and climate may have a dual impact, supporting resilience and reducing pathological risk.

Empowerment

The SSM proposed empowerment as the underlying mechanism enabling individuals to draw upon available resources and translate their workplace encounters into meaningful, coherent, and manageable experiences (Paton et al., 2008). As such, hypothesis two of the current study predicted empowerment would mediate the relationship between individual, interpersonal, and organisational factors, and outcomes in resilience. Results from this study found partial support for this hypothesis. Relationships between the predictors and outcomes

in resilience and job satisfaction were not be mediated by empowerment. However, a significant indirect effect was found for the predictor organisational resources via empowerment on stress-related growth.

Individuals displaying growth derive meaning, develop their sense of competency, and perceive their involvement as impactful from experiencing subjectively adverse events (Brooks et al., 2020). The results from the present study indicate empowerment partially facilitates this process and promotes growth in animal care professionals. The indirect effect of organisational resources predicted positive increases in growth via the mediator empowerment. This suggests animal care workplaces can encourage employee empowerment through provision of resources, such as skill development and workload control, which in turn will support personal growth.

The finding that empowerment did not mediate the relationships between predictors and resilience and job satisfaction diverged from expectations and the SSM (Paton et al., 2008). In earlier studies, empowerment has been found to partially mediate the effects of team and leader relationships on emotional exhaustion and depression, resulting in a reduction in adverse wellbeing outcomes (Schermuly & Meyer, 2016). Additionally, empowerment has been found to mediate the relationship between job resources and satisfaction in the workplace (Liden et al., 2000). A possibility for the unanticipated results from this study may be due to the unique challenges faced by animal care professionals compared to other working populations.

Animal carers often lack control and choice in animal treatments and euthanasia (Deacon & Brough, 2019; Hill et al., 2020). This population has been identified at risk of moral stress and encountering the care-kill paradox, experiences produced by conflicts between an animal care professionals motivations to improve animal welfare and the workplace requirements to perform euthanasia or provide treatments they do not endorse

(Arluke, 1994; Deacon & Brough, 2019; Rohlf & Bennett, 2005). It is possible involvement in morally conflicting job tasks limits the ability for animal professionals to generate meaning (align personal values with conflicting values) and perceive impact (achieve desired goals when unable to make choices of care) from such scenarios. Generation of meaning, coherency, and manageability from adverse experiences underly the salutogenic perspective of resilience and maintenance of wellbeing (Antonovsky, 1996; Paton et al., 2012). Furthermore, earlier research has identified additional factors relevant to animal care professionals that can moderate empowerment as an outcome and mediator, such as emotional exhaustion (Dust et al., 2018) and positive affect (Mohammed & Mostafa, 2017). Thus, further investigation of individual and workplace factors not examined in the SSM may identify additional features promoting and hindering resilience and adaptive growth in animal care professionals.

Limitations and Future Directions

Several limitations present in this study may influence the interpretations and generalisability of findings. Firstly, survey data was collected during the COVID-19 pandemic. Public health recommendations and restrictions saw many animal care services depart from normal operating procedures. Additionally, social supports within and outside of the workplace were limited due to health and safety policies. As such, the work environment of the study's population was unusual, limiting the generalisability of findings from this study to a context outside of a pandemic situation. However, it does provide a perspective of outcomes and predictors in this population during an ambiguous and novel time.

Another limitation to generalisability is due to not comparing participants between occupations or residency. One of the aims of this study was to capture the experiences across a range of animal care occupations as many are presently understudied, such as animal laboratory technicians, wildlife carers, and zookeepers. While these occupations hold

similarities, there are likely substantial variations on job tasks and stressors between workplaces. For example, many wildlife carers often work independently or with limited contact with colleagues and supervisors (Englefield et al., 2019). On a similar note, experiences between Australian and New Zealand employees may vary as result of national regulations and cultural differences. However, cultural differences are not expected to be large, as previous studies have found differences on coping and health outcomes to be non-significant between nurses from Australia and New Zealand (Chang et al., 2007). Unfortunately, participants numbers per occupation and region were not sufficient to achieve appropriate power. Many participants from this study resided in Australia or worked in a veterinary organisation. Thus, interpretations and generalisability across occupations and countries may be limited. Overall, understandings of animal care professionals experience and resilience would benefit from cultural and occupational comparisons and continued investigation.

A further limitation relates to the measurement of growth. For stress-related growth to occur, a significant and subjectively stressful event is required as a catalyst (Tedeschi & Calhoun, 2004). In the current study, the presence of significant stressor was not confirmed. Additionally, measures of growth have been criticised as limited due to their retrospective assessment, as participants may be inclined to report illusory growth to maintain positive views of self and events (Maitlis, 2020). Yet, the present study utilised a revised version of the stress-related growth scale, which has promising evidence of reflecting actual growth rather than illusory growth (Boals & Schuler, 2018). Some caution is warranted in interpreting the current study's findings that animal care profession population did not undergo growth following a self-identified significant stressor. Future research with the animal carer population may benefit from longitudinal research designs, as it has been suggested measures of baseline functioning prior to an event would be required to accurately

capture personal growth (Maitlis, 2020).

Longitudinal design and participant follow-up could also address concerns of selection-bias, as cross-sectional studies are vulnerable to the healthy worker effect and underestimating the prevalence of adverse health outcomes (Pearce et al., 2007). Wellbeing concerns and low motivation may lead employees to change occupations or discontinue employment, resulting in an over-representation of healthy workers selected for studies (Shah, 2009). Continuing research with animal care professionals can attempt to minimise selection bias through time-lag and longitudinal designs (Shah, 2009).

Research to date on animal care professionals' experiences have focused on the prevalence of pathology. To strengthen confidence in the findings of the present study, replication and further investigation into supporting resilience in animal care professions is required (Cake et al., 2017). Further research would also likely benefit from investigation of unique experiences in animal care professionals compared to other professions (Deacon & Brough, 2019; Scotney et al., 2015), as they may influence relationships between individual, interpersonal, and organisations factors and outcomes in resilience. Future research would additionally benefit from investigation of additional factors likely to impact this population, such as human-animal bonds (Hanrahan et al., 2018), human client interactions (Polachek & Wallace, 2018), emotional-regulation (Kay, 2016), and emotional exhaustion (Dust et al., 2018).

Implications

Despite differences between human care service providers and animal care professionals, results from the current study indicate that much like human service providers, promoting outcomes in resilience may be promoted through multifaceted approaches (Paton et al., 2008). To date, there has been a paucity of research into the efficacy and impacts of interventions into the animal care workplace (Rohlf, 2018). Furthermore, of the intervention

studies, there has been a focus on individual level intervention techniques, such as improving self-awareness, psychoeducation, and stress reduction exercises (i.e. breathing techniques and yoga; Rohlf, 2018). Results from the present study indicate future interventions and prevention strategies would benefit from considering features of interpersonal workplace interactions and organisational climate, along with the individual in their designs.

Findings from the current study suggests individuals can contribute to their potential for experiencing resiliency and growth. Animal care professionals may benefit from evaluating their current coping strategies and adjusting their styles to increase responses of positive reappraisal, problem-solving, and acceptance. Reduction of avoidance, disengagement from stressors, and use of emotional diffusion may also be beneficial. However, the organisation also plays a role in influencing individual selection of coping strategies (Spreitzer, 1995b). As such, workplace interventions may be able to support animal care staff by increasing their choices and opportunities to process and respond to workplace stressors (Deacon & Brough, 2019; Spreitzer, 1995b).

The positive associations between team relationships and outcomes in resilience and growth found in the present study indicate fostering positive team environments may be a valuable approach in maintaining and recovering wellbeing of animal care professionals. Supportive teams are perceived as a resource (Kimber & Gardner, 2016) and a source of emotional support (White, 2018), and can also protect animal care professionals from psychological distress and burnout (Pizzolon et al., 2019). Cohesive and supportive team environments can be facilitated by creating an organisational climate encouraging trust, communication, and mutual support (Moore et al., 2014; Paton et al., 2012). Leaders can also support cohesive team relationships and individual competencies, through feedback reinforcing organisational goals and values (Paton et al., 2008). As indicated by results from the current study, encouraging quality exchanges between leaders and staff can also support

individual staff to derive satisfaction from their workplace.

Organisations wanting to support their animal care staff may need to examine the balance between work demands and available resources. As identified in the present study, workplace demands and resources predicted variations across outcomes in growth, resilience, and job satisfaction. Ensuring the availability of job resources, such as opportunities to develop skills and control workloads, can assist in managing demanding job tasks (Black et al., 2011; Kimber & Gardner, 2016). Workplaces can further aid stress management through monitoring of work hours and workloads of their staff and provide support in meeting and managing expectations from human clients and outcomes in animal care (Gardner & Hini, 2006).

Conclusions

The SSM explained several relationships between individual, interpersonal, and organisational factors and outcomes in resilience and adaptive capacity in animal care professionals. Animal care professionals higher in conscientiousness displayed increased resilience yet may be vulnerable to dissatisfaction with their work. Coping strategies favouring problem-solving and approach responses were found beneficial in fostering resilience and growth, whilst avoidance and emotional mitigation attempts may be detrimental. Team relationships appeared to act as a resource supporting resilience and growth outcomes, whilst relationships with leaders predicted job satisfaction. Organisational resources and job demands predicted multiple outcomes, highlighting these as key areas workplaces can address in improving resilience and wellbeing. However, contrary to the SSM, this study indicated empowerment does not fully facilitate individual's capacity to draw upon resources in the context of animal care professions.

Findings from this study have implications for supporting resilience and wellbeing in animal care professionals. Future interventions and prevention strategies would benefit by

incorporating multi-dimensional approaches to address the individual, interpersonal, and organisational factors support resilience.

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Appendices

Appendix A

Poster Advertisement

RESEARCH OPPORTUNITY

UNIVERSITY of TASMANIA
AUSTRALIA

Resilience in Animal Care Professions: Does the Stress Shield Model Fit?

Are you an employee or volunteer currently working in an animal care profession within Australia or New Zealand?

How can you help?

We want to explore the individual and workplace predictors of resilience in animal care professionals. Your participation could help increase understanding of resilience in persons working with animals, and inform future workplace practices and interventions to support psychological wellbeing.

Interested?

- Scan the QR code on your phone or follow the link below to complete the online survey.
- https://surveys2.utas.edu.au/index.php/557744?lang=en
- The survey is expected to take approximately 45-60 Minutes to complete.
- Participants can enter the draw to win one of six gift cards valued at AUD $50 for Australian participants or NZD $50 for New Zealand participants.

Chief Investigator: Crystal Meehan (Crystal.Meehan@utas.edu.au), **Co-Investigator**: Kimberley Norris (Kimberley.Norris@utas.edu.au), **Student Investigator**: Nicole Cushing (ncushing@utas.edu.au) **Ethics approval number**: 20430

Appendix B

Ethics Approval Letter

Ethics Approval Letter

27/05/2020

To: Dr Meehan

Project ID: 20430

Project Title: Resilience in Animal Care Professions: Does the Stress Shield Model Fit?

The above named project has been approved by the Tasmania Social Sciences Human Research Ethics Committee on the 29 April 2020

Approval has been granted for the following documentation:

Submission Document Name	Submission Document File Name	Submission Document Type	Submission Document Date	Submission Document Version
Cover sheet revisions_v1	Cover sheet revisions_v1.docx	OTHER PROJECT-RELATED DOCUMENTATION	27/04/2020	1
Human Ethics - Protocol_Resilience Animal Care Professions_amendments	Human Ethics - Protocol_Resilience Animal Care Professions_amendments.docx	PROTOCOL	27/04/2020	2
Measures - Resilience in Animal Care Professions_Revised_TC	Measures - Resilience in Animal Care Professions_Revised_TC.pdf	QUESTIONNAIRE	27/04/2020	2
PIS - Resilience in Animal Care _amendment	PIS - Resilience in Animal Care _amendment.docx	PARTICIPANT INFORMATION AND CONSENT FORM	15/05/2020	3
Website advertisement - Resilience in Animal Care Professions_Amended_TC	Website advertisement - Resilience in Animal Care Professions_Amended_TC.docx	ADVERTISING MATERIAL	27/04/2020	2
Wesbite adverstisement Poster - Resilience Animal Care_COLOUR	Wesbite adverstisement Poster - Resilience Animal Care_COLOUR.pptx	ADVERTISING MATERIAL	15/05/2020	3

The Tasmania Social Sciences Human Research Ethics Committee has provided approval for the project to be conducted at the following sites:

- Sandy Bay Campus, Hobart

Please ensure that all investigators involved with this project have cited the approved versions of the documents listed within this letter and use only these versions in conducting this research project.

This approval constitutes ethical clearance by the Tasmania Social Sciences Human Research Ethics Committee. The decision and authority to commence the associated research may be dependent on factors beyond the remit of the ethics review process. For example, your research may need ethics clearance from other organisations or review by your research governance coordinator or Head of Department. It is your responsibility to find out if the approvals of other bodies or authorities are required. It is recommended that the proposed research should not commence until you have satisfied these requirements.

In accordance with the National Statement on Ethical Conduct in Human Research 2007 (updated 2018), it is the responsibility of institutions and researchers to be aware of both general and specific legal requirements, wherever relevant. If researchers are uncertain they should seek legal advice to confirm that their proposed research is in compliant with the relevant laws. University of Tasmania researchers may seek legal advice from Legal Services at the University.

All committees operating under the Human Research Ethics Committee (Tasmania) Network are registered and required to comply with the National Statement on the Ethical Conduct in Human Research 2007 (updated 2018).

Therefore, the Chief Investigator's responsibility is to ensure that:

(1) All investigators are aware of the terms of approval, and that the research is conducted in compliance with the HREC approved protocol or project description.

(2) Modifications to the protocol do not proceed until **approval** is obtained in writing from the HREC. This includes, but is not limited to, amendments that:

(i) are proposed or undertaken in order to eliminate immediate risks to participants;
(ii) may increase the risks to participants;
(iii) significantly affect the conduct of the research; or
(iv) involve changes to investigator involvement with the project.

Please note that all requests for changes to approved documents must include a version number and date when submitted for review by the HREC.

(3) Reports are provided to the HREC on the progress of the research and any safety reports or monitoring requirements as indicated in NHMRC guidance.

Guidance for the appropriate forms for reporting such events in relation to clinical and non-clinical trials and innovations can be located under the ERM "Help Tab" in "Templates". All adverse events must be reported regardless of whether or not the event, in your opinion, is a direct effect of the therapeutic goods being tested.

(4) The HREC is informed as soon as possible of any new safety information, from other published or unpublished research, that may have an impact on the continued ethical acceptability of the research or that may indicate the need for modification of the project.

(5) All research participants must be provided with the current Participant Information Sheet and Consent Form, unless otherwise approved by the Committee.

(6) This study has approval for four years contingent upon annual review. A Progress Report is to be provided on the anniversary date of your approval. Your first report is due on the anniversary of your approval, and you will be sent a courtesy reminder closer to this due date. Ethical approval for this project will lapse if a Progress Report is not submitted in the time frame provided.

(7) A Final Report and a copy of the published material, either in full or abstract, must be provided at the end of the project.

(8) The HREC is advised of any complaints received or ethical issues that arise during the course of the project.
(9) The HREC is advised promptly of the emergence of circumstances where a court, law enforcement agency or regulator seeks to compel the release of findings or results. Researchers must develop a strategy for addressing this and seek advice from the HREC.

Should you have any queries please do not hesitate to contact the Ethics Office via the online correspondence tab within your project.

Kind regards

Jude Vienna-Hallam

Ethics Executive Officer | Social Sciences

UNIVERSITY*of*
TASMANIA

Appendix C

Participant Information Sheet

Private Bag 30
Hobart
Tasmania 7001 Australia
Phone: (03) 6226 2922
Email: Crystal.Meehan@utas.edu.au

SCHOOL OF PSYCHOLOGICAL SCIENCES

Resilience in Animal Care Professions: Does the Stress Shield Model Fit?

Information Sheet for Participants

1. Invitation

You are invited to participate in a research study examining the resilience of persons working in animal care professions. This study is being conducted as part of an Honours degree in Psychology by Nicole Cushing, under the supervision of Dr Crystal Meehan and Associate Professor Kimberley Norris within the School of Psychological Sciences at the University of Tasmania.

2. What is the purpose of this study?

The purpose of this study is to investigate the individual, workplace, and organisational elements predicting resilience in animal care professions. The outcomes from this study are anticipated to increase understandings of the individual and workplace factors that foster psychological wellbeing and resilience within animal care professionals. This study may also inform future workplace practices and interventions to support these individuals.

3. Why have I been invited to participate?

You are eligible to participate in this study because you are over 18 years of age, currently reside in Australia or New Zealand and work (paid or voluntary) in an animal care profession. This includes veterinarians, veterinary nurses/technicians, animal attendants/kennel hands, wildlife rescue and carers, zookeepers, and laboratory animal technicians.
Participation in this study is voluntary. There will be no consequences if you decide not to participate.

4. What will I be asked to do?

You will be asked to complete an online survey investigating individual traits, coping styles, workplace cohesiveness, job demands and resources, job satisfaction, personal growth, and resilience. The survey will also ask some general demographic questions about yourself and your occupation. It is estimated to take between 45-60 minutes. You will be requested to provide participation consent prior to commencing the survey. Your submission of the survey will imply consent.

Following the completion of the survey, you will be invited to enter the draw to receive one of six gift cards valued at AUD $50 for Australian participants or NZD $50 for New Zealand participants. Please follow the link at the end of the survey to enter your details if you wish to enter this prize draw.

5. Are there any possible benefits from participation in this study?

This study will ask that you reflect on your experiences as an animal care professional. Such reflection provides an opportunity for you to gain insight into your own wellbeing, coping strategies and processes. Upon completion of the study, you will also have the opportunity to go into the draw to receive one of six gift vouchers. Australian participants will have the opportunity to go into the draw to receive an AUD $50 gift voucher which is redeemable at a number of participating retailers (Coles, Myer, and more). New Zealand participants will have the opportunity to go into the draw to receive an NZD $50 gift voucher which is redeemable at a number of participating retailers (Farmers, Mitre 10, and more).

6. Are there any possible risks from participation in this study?

The survey will include questions regarding your past experiences while performing duties within the animal care workplace. We acknowledge some events in the workplace can be negative and recalling of such experiences may cause discomfort or distress. If at any time you experience discomfort while completing the survey, please remember your participation is voluntary and you may withdraw at any time before submission of the survey, simply by closing the browser window.

Should you experience discomfort or distress, please contact any of the following resources:

- A Mental Health Professional or local General Practitioner (Wang & Lee, 2009). If you do not have access to a Mental Health Professional, a GP will be able to assist in referring you to one.
- Please also feel free to contact the Chief Investigator, Dr Crystal Meehan, via the contact information below.

Resources in Australia:

- Lifeline Australia are available for crisis support 24/7 via telephone on 13 11 14. They can also be reached 7 days a week via an online chat on their website between 7pm and midnight at www.lifeline.org.au/get-help/online-services/crisis-chat. They can also be contacted via text on 0477 13 11 14 from 6pm to midnight, 7 days a week.
- Beyond Blue are available for support and advice 24/7 via telephone on 1300 224 636. They also have a chat service available online from 3pm to midnight, 7 days a week at www.beyondblue.org.au/get-support/get-immediate-support.

Resources in New Zealand:

- Lifeline Aotearoa are available for crisis support 24/7 via telephone on 0800 54 33 54. They can also be reached 24/7 via text on 4357.
- Samaritans Aotearoa/New Zealand are available 24/7 via telephone on 0800 72 66 66.
- Additional and specific resources can also be found online via the Mental Health Foundation website at https://www.mentalhealth.org.nz/get-help/in-crisis/helplines/.

7. What if I change my mind during or after the study?

You are free to withdraw from this study at any time without consequence or explanation. If you wish to cease participation, exit the survey by closing the browser window before submitting your responses and your data will not be collected.
Please note, once you have submitted the survey your responses cannot be withdrawn. Due to the de-identification of your data, it will not be possible to identify your data for removal.

8. What will happen to the information when this study is over?

The data collected form this study will be de-identified and held securely in the University of Tasmania on password-protected cloud storage. Only researchers involved with this study will have access to the data. Your confidentiality and anonymity will be maintained should data from this study be used in future research.

9. How will the results of the study be published?

Findings from this study will be published in an academic journal and included in the student's thesis as part of an Honours degree in Psychology. A summary of results will be provided to your organisation via email and social media where the study was originally advertised. No personally identifiable information will be included in the results. As data will be de-identified, individual feedback will not be possible. If you would like to receive a copy of results directly or discuss the results in further detail, please contact the Chief Investigator via email (Crystal.Meehan@utas.edu.au).

10. What if I have questions about this study?

If you have any concerns or would like to discuss this study further, please feel free to contact the following:

- Dr Crystal Meehan, Chief Investigator: Crystal.Meehan@utas.edu.au
- Associate Professor Kimberley Norris, Co-Investigator: Kimberley.Norris@utas.edu.au

This study has been approved by the Tasmanian Social Sciences Human Research Ethics Committee. If you have concerns or complaints about the conduct of this study, please contact the Executive Officer of the HREC (Tasmania) Network on +61 3 6226 6254 or email ss.ethics@utas.edu.au. The Executive Officer is the person nominated to receive complaints from research participants. Please quote ethics reference number 20430.

This is an anonymous survey. Your completion and submission of the survey will imply consent.

Thank you for your participation in this study.

Appendix D

BCOPE Factor Analyses

Prior to running an exploratory factor analysis (EFA), items were investigated for multicollinearity using Spearman's rank-order correlation and sampling adequacy using the Kaiser-Meyer-Olkin (KMO) Test. BCOPE scale items four and eleven were found highly correlated (r_s = .89) and possessed mediocre KMO values (.65 – .66). It was decided to remove item eleven to correct multicollinearity and improve identification of the item's factor contribution (Field, 2013). The remaining item four KMO increased to a meritorious value (0.85). Additionally, the two items on use of religion and spirituality coping only reached correlation values $r < .3$ with each other and were found to have mediocre KMO values (.65 - .67). As noted by Krägeloh (2011) factor analyses including religion and spirituality items have varied widely in their results, posited as due to the highly subjective value and attitude toward religion. Thus, items on religion and spirituality coping were also removed.

The remaining items were explored using an exploratory factor analysis with oblimin rotation. Principal axis factor was applied due to considerable violations of distribution normality (Fabrigar et al., 1999). Barlett's Test of Sphericity was not significant, indicating a significant difference from an identity matrix. Initial loadings based on parallel analysis identified five factors, loadings of several items were below 0.3 (Table E1). A second analysis based on eigenvalues > 1 revealed three factors (Table E2) with a significantly improved model fit compared to the confirmatory factor analysis model (Table E3). The identified factors from the second extraction were chosen due to the increase in factor loading values and meaningfulness of extracted factors. These factors were labelled problem-approach coping (PAC), emotion-avoidant coping (EAC), and social support coping (SSC).

Table D1

Exploratory Factor Analysis Loadings Using Parallel Analysis

	Factors				
Brief COPE item	1	2	3	4	5
1. Self-Distraction	.21	<.10	<.10	**.22**	.12
2. Active	**.66**	<.10	<.10	<.10	<.10
3. Denial	<.10	<.10	<.10	**.65**	<.10
4. Substance use	<.10	.15	.22	**.33**	<.10
5. Emotional Support	<.10	**.85**	<.10	<.10	<.10
6. Behavioral Disengagement	-.13	<.10	.23	**.42**	.33
7. Active	**.72**	.13	<.10	<.10	-.12
8. Denial	<.10	<.10	<.10	**.68**	<.10
9. Venting	<.10	.17	**.33**	.11	.20
10. Instrumental Support	.11	**.74**	<.10	<.10	<.10
12. Positive Reframing	**.41**	<.10	.26	<.10	-.39
13. Self-Blame	.15	<.10	.16	<.10	**.65**
14. Planning	**.74**	<.10	<.10	<.10	<.10
15. Emotional Support	<.10	**.84**	<.10	<.10	<.10
16. Behavioral Disengagement	<.10	-.10	.15	**.43**	.29
17. Positive Reframing	**.41**	<.10	.33	<.10	-.36
18. Humor	<.10	<.10	**.81**	<.10	<.10
19. Self-Distraction	.17	.11	**.25**	.17	.18
20. Acceptance	**.50**	-.14	.21	-.21	<.10
21. Venting	<.10	.26	**.28**	<.10	.16
23. Instrumental Support	.19	**.67**	<.10	<.10	<.10
24. Acceptance	**.40**	<.10	.22	<.10	.18
25. Planning	**.71**	<.10	<.10	<.10	.19
26. Self-Blame	<.10	.12	.12	.15	**.54**
28. Humor	<.10	<.10	**.73**	<.10	<.10

Note. Bold text indicates highest loading value of each item

Table D2

Exploratory Factor Analysis Loadings of Final Coping Styles Using Eigenvalues

BCOPE item	Factors		
	Emotion-avoidant	Problem-approach	Social support
1. Self-Distraction	**.31**	.16	<.10
2. Active	<.10	**.55**	.11
3. Denial	**.38**	<.10	.15
4. Substance use	**.43**	<.10	.13
5. Emotional Support	.10	<.10	**.83**
6. Behavioral Disengagement	**.73**	-.17	<.10
7. Active	-.13	**.66**	.21
8. Denial	**.42**	<.10	<.10
9. Venting	**.47**	.13	.13
10. Instrumental Support	<.10	<.10	**.75**
12. Positive Reframing	<.10	**.58**	<.10
13. Self-Blame	**.64**	<.10	<.10
14. Planning	<.10	**.61**	.20
15. Emotional Support	<.10	<.10	**.77**
16. Behavioral Disengagement	**.64**	-.14	<.10
17. Positive Reframing	<.10	**.63**	<.10
18. Humor	**.54**	.34	<.10
19. Self-Distraction	**.44**	.21	.10
20. Acceptance	<.10	**.61**	-.17
21. Venting	**.30**	.12	.20
23. Instrumental Support	<.10	.11	**.72**
24. Acceptance	.22	**.44**	<.10
25. Planning	<.10	**.53**	.20
26. Self-Blame	**.59**	<.10	.17
28. Humor	**.53**	.30	-.16

Note. Bold text indicates highest loading value of each item

Table D3

Model Fit of Confirmatory and Exploratory Factor Analyses of Brief COPE Scale Items

Model	χ^2	df	*p*	RMSEA	TLI	BIC
CFA						
Two factors	3036.66	349	< .001	0.140	0.378	26879.53
EFA parallel						
Five factors	635.13	185	< .001	0.079	0.798	-470.03
EFA Eigenvalues						
Three factors	1013.84	228	< .001	0.094	0.714	-348.19

Note. CFA = confirmatory factor analysis, EFA = exploratory factor analyses

Appendix E

Correlation Values Between Measures

Table E1

Correlation matrix of predictors and outcome variables total scale scores

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Problem-Approach Coping	-											
2. Emotion-Avoidant Coping	.30**	-										
3. Social Support Coping	.47**	.35**	-									
4. Conscientiousness	.00	-.20**	-.02	-								
5. Team-member Exchange	.20**	.05	.21**	.10	-							
6. Leader-member Exchange	.13*	-.12*	.01	.06	.37**	-						
7. Job Demands	.14**	.44**	.17**	-.02	.10	-.21**	-					
8. Organisation	.15**	-.19**	.07	.04	.40**	.57**	-.02	-				
9. Empowerment	.13*	-.28**	-.02	.16**	.31**	.44**	-.10	.70**	-			
10. Resilience	.21**	-.33**	.18**	.35**	.33**	.22**	-.18**	.34**	.35**	-		
11. Stress-related growth	.13**	-.22**	.08	.01	.24**	.31**	-.20**	.35**	.35**	.33**	-	
12. Job satisfaction	.10	-.22**	.02	-.02	.31**	.70**	-.39**	.65**	.43**	.29**	.35**	-

Note $p < .05$ = *, $p < .001$ = **