

# The Prevalence of Compassion Fatigue among Veterinary Students in Australia and the Associated Psychological Factors

Michelle L. McArthur ■ Jena R. Andrews ■ Conor Brand ■ Susan J. Hazel

## ABSTRACT

Compassion fatigue, compassion satisfaction, and other characteristics such as mindfulness and mental health stigma have not been investigated in veterinary students. The aims of this study were twofold: first to determine the prevalence of compassion, satisfaction, burnout, and secondary traumatic stress among Australian veterinary students and second to investigate the association between these factors and self-stigma, coping, empathy, and mindfulness. A cross-sectional online survey consisting of demographic questions and four validated psychological measures sampled 828 students, with a response rate of 31% (255/828). We obtained a usable sample of completed surveys from 193 of 828 (23%) veterinary students from six of the seven Australian veterinary schools. Bivariate correlations and multiple regression analyses were used to examine associations between the psychological predictors and the outcome variables. Approximately 30% of veterinary students were at high risk of burnout, 24% were at high risk of secondary traumatic stress, and 21% reported low compassion satisfaction. High empathic concern, low personal distress, female gender, and employment history at a veterinary clinic were associated with high compassion satisfaction. High dysfunctional coping, low nonjudgmental and acting-with-awareness mindfulness, and lack of previous employment at a veterinary clinic were associated with high burnout. High dysfunctional coping, low acting-with-awareness mindfulness, high self-stigma, and high personal distress were associated with high secondary traumatic stress. As a result of these findings, certain emotional characteristics can be identified as targets for intervention to minimize the frequency and potentially negative impact of compassion fatigue and burnout in veterinary students.

**Key words:** veterinary students, compassion fatigue, burnout, compassion satisfaction, mindfulness, empathy, self-stigma, coping

## INTRODUCTION

In the course of their work, veterinarians are subjected to a myriad of stressors as a direct result of their role as medical caregivers for animals. However, veterinarians also experience many facets of their work that are empowering and emotionally fulfilling, such as improving the health of animals and strengthening the human-animal bond. When considering professional quality of life, the sources of both distress and satisfaction need to be addressed. To this end, three factors—burnout, secondary traumatic stress, and compassion satisfaction—make up the singular category termed professional quality of life, which describes the quality an individual feels in relation to his or her work as a helper.<sup>1</sup>

According to Stamm,<sup>1</sup> compassion fatigue is composed of two parts: burnout and secondary traumatic stress. A related factor, compassion satisfaction, is described as the positive feelings an individual experiences as a result of helping others through stressful situations.<sup>1</sup> Burnout is associated with workplace stress and can result in the individual feeling overwhelmed and frustrated.<sup>1</sup> Secondary traumatic stress is associated with an individual's second-

ary exposure to people who have experienced stressful events and can result in sleeping difficulties as well as other psychological distress.<sup>1</sup> Unlike burnout, secondary traumatic stress may occur suddenly.<sup>1</sup> Burnout alone has been previously researched in veterinarians<sup>2,3</sup> and veterinary students.<sup>4</sup> However, to the best of the authors' knowledge, there exists no published literature on secondary traumatic stress, a component of compassion fatigue, or compassion satisfaction in veterinary medicine.

Although quantitative evidence of compassion fatigue among veterinarians is largely lacking, there are many anecdotal accounts of veterinarians experiencing compassion fatigue in the workplace. Pressure to provide high-level care can cause the veterinarian to feel emotionally drained in part because of the client's attachment and the fact that many clients feel their companion animal is part of the family.<sup>5</sup> Veterinarians are especially vulnerable to experiencing compassion fatigue due to their complicated role as both a helper to the animal and its owner.<sup>6</sup> In a survey of Australian veterinarians, poor psychological health was quite common, and worryingly worse psychological health was evident in recent graduates.<sup>7</sup>

Compassion fatigue may play a part in this reported ill-health.

Australian veterinary students spend a significant proportion of their time on extramural study (EMS) placements within veterinary clinics, working alongside veterinarians and their clients. Many students also have paid employment in veterinary practices, often as veterinary nurses. In light of these work experiences, students may be confronted with the same stressors as veterinarians in the workplace. It is argued that young, inexperienced people may still be developing the skills required to combat burnout and secondary traumatic stress, and so may be more vulnerable.<sup>4,8</sup> Therefore, inexperienced medical students dealing with trauma during EMS placements may be at risk.<sup>9</sup> Previous studies have postulated that health care professional students are at risk of compassion fatigue through the practical work they undertake as part of their studies.<sup>10</sup> The emotional impact of EMS experiences on veterinary students is not well understood.

While compassion fatigue and low compassion satisfaction may have deleterious effects, there are many other psychological factors thought to influence professional quality of life. These include mindfulness, empathy, and coping strategies, as discussed in the following paragraphs.

Mindfulness is most commonly described as enhanced attention to current experiences with a nonjudgmental attitude.<sup>11,12</sup> Although there is a mindfulness component of self-compassion that lessens self-judgment, these are two different constructs in that mindfulness is an accepting yet detached attitude, whereas self-compassion involves extending kindness and understanding to oneself in response to perceived inadequacy, failure, or pain.<sup>13</sup> An increasing number of studies are investigating the use of mindfulness as a clinical training tool, but this is not well investigated in veterinary medicine. Mindfulness contributes directly to decreased levels of burnout and is the strongest predictor of increased compassion satisfaction.<sup>14</sup> In a study involving 84 hospital health care professionals, levels of emotional exhaustion improved as a result of participation in an 8-week mindfulness meditation program.<sup>15</sup> Mindfulness and certain facets of empathy in clinical social workers may significantly predict compassion fatigue and compassion satisfaction.<sup>14</sup> Thus both mindfulness and empathy may be important constructs to consider when examining compassion satisfaction and compassion fatigue in veterinary students.

Empathy is a multi-dimensional interpersonal experience comprising both cognitive processes (the ability to simply appreciate another's perspective) and affective processes (an emotional reaction to another's experience).<sup>16</sup> Accurate measurement of self-reported empathy should include both cognitive and emotional aspects of empathy.<sup>16</sup> It has been postulated that empathy is a necessary element of emotional health and well-being and is fundamental to the development of relationships, both personal and professional.<sup>17</sup> Specifically, empathy is also related to client satisfaction in companion-animal consultations.<sup>18</sup> However, higher empathy has been associated with a response bias toward sad and fearful faces<sup>19</sup> and thus may increase the risk for empathic distress or compassion fatigue. A better understanding of the relationships between

the multifaceted construct of empathy and compassion fatigue and compassion satisfaction is required.

Coping is the mechanism by which individuals contend with difficulties when attempting to overcome them.<sup>20</sup> Coping strategies play an important role in adapting to stressful situations and can be divided into three categories: emotion-focused, problem-focused, and dysfunctional coping.<sup>20</sup> Emotion-focused coping involves positive growth, humor, and acceptance. Problem-focused coping involves planning and suppression of competing activities. Dysfunctional coping involves denial, behavioral and mental disengagement, and ineffective patterns in the venting of emotions. Explicit teaching of context-specific emotion or problem-focused coping strategies in the veterinary curriculum may reduce the prevalence of depression, anxiety, stress, and burnout among veterinary graduates.<sup>3</sup>

One important facet of dysfunctional coping is self-stigma. Self-stigma can result in feelings of disgust, a loss of self-esteem, and social withdrawal<sup>21</sup> and can perpetuate worries regarding others' perception of oneself, as found in a UK study of veterinary students and staff.<sup>22</sup> Students in the study felt unable to seek help from counseling staff because of the perceived stigmatization and the fear of being viewed as having difficulty coping. Self-stigma may also be related to burnout. In a study of social workers, those with more difficulty seeking help experienced increased levels of burnout.<sup>23</sup>

The objective of this study was to investigate the prevalence of compassion satisfaction, compassion fatigue, and burnout in Australian veterinary students. In addition, the study sought to examine the association between validated measures of compassion fatigue, compassion satisfaction, self-stigma, coping, empathy, self-compassion, and mindfulness and to inform possible strategies for building resilience in veterinary students in Australia. The research questions of this study examined whether the models of psychological factors and controls are able to significantly predict the experiences of compassion satisfaction, burnout, and secondary traumatic stress in Australian veterinary students. Exploration of the relationships between compassion satisfaction, burnout, and secondary traumatic stress and the factors associated with resilience may allow certain emotional characteristics to be identified as potential targets for intervention to minimize the frequency and negative impact of compassion fatigue in veterinary students.

## MATERIALS AND METHODS

### Procedure

Students from all seven veterinary schools in Australia were invited to participate in the study. Specifically, the survey was aimed at veterinary students who had completed at least 2 weeks of clinical EMS placement at a veterinary clinic or who had worked in a veterinary clinic before. Students who did not meet either of these criteria were excluded from the study.

Administrative staff members at each veterinary school were identified by their colleagues as potential distributors of an email invitation to the study. Six of seven schools agreed to distribute the survey to eligible students

**Table 1:** Cut-off scores for the ProQOL scale (adapted from Stamm<sup>1</sup>)

ProQOL variable	Bottom quartile (Low score)	Mean (Average score)	Top quartile (High score)
Compassion satisfaction	< 44	44–57	> 57
Burnout	< 43	43–56	> 56
Secondary traumatic stress	< 42	42–56	> 56

by email. An information sheet to be forwarded to the appropriate students was emailed to each veterinary school, which included a link to the online survey. Follow-up emails were sent after approximately 2 weeks, which included another copy of the information sheet to be re-sent to eligible students. Students were also contacted through Facebook and provided with the same information sheet to distribute among their peers. Survey responses were received over approximately 6 weeks from the end of July 2015 to the beginning of September 2015.

### Survey

The study was carried out with the approval of the University of Adelaide Human Research Ethics Committee. The survey was conducted online using SurveyMonkey (<https://www.surveymonkey.com/>) and consisted of several demographic questions and six validated psychological measures. The demographic questions covered students' age and gender, and whether the student had worked in a veterinary practice, either previously or currently.

### Participants

A total of 828 veterinary students were invited to participate in the study. By the end of the survey period, 255 of 828 veterinary students had completed the survey (31%) and 193 of 828 students met the inclusion criteria and completed the entire survey (23%).

### Outcome Variable

#### *Compassion Fatigue and Compassion Satisfaction*

We measured compassion fatigue and compassion satisfaction using the Professional Quality of Life Scale (version 5), known as the ProQOL.<sup>1</sup> The ProQOL is a 30-item scale consisting of three subscales: compassion satisfaction, burnout, and secondary traumatic stress. Two subscales, burnout and secondary traumatic stress, are elements of compassion fatigue, whereas compassion satisfaction is a stand-alone measure. Participants ranked 30 statements in terms of frequency in the past 30 days on a Likert scale from 1 (*never*) to 5 (*very often*). After reverse coding some scores, the points for each subscale were summed to give the raw score. The raw score was then converted to a *t*-score. The *t*-score can then be transformed into cut-off scores, using the 25th, 50th, and 75th percentile (low, medium, and high, respectively), as validated in the ProQOL manual.<sup>1</sup> Although Stamm<sup>1</sup> prefers a continuous variable, the cut-off scores were used in this study to approximate the prevalence of compassion satisfaction and

compassion fatigue within the veterinary student community. Several recent studies have used this categorical form to determine the prevalence of compassion fatigue among populations of medical professionals or students.<sup>24,25</sup> These cut-off scores are detailed in Table 1.

Compassion satisfaction was measured with items such as "I get satisfaction from being able to help people" and "I feel invigorated after working with those I help." Burnout was measured with items such as "I feel trapped by my job as a helper" and "I feel overwhelmed because my case/workload seems endless." Secondary traumatic stress was measured with items such as "I am preoccupied with more than one person I help" and "I think that I might have been affected by the traumatic stress of those I help." The scale has demonstrated good internal reliability for the compassion satisfaction and secondary traumatic stress scales ( $\alpha = .88$  and  $.81$ , respectively), and acceptable internal reliability ( $\alpha = .75$ ) for the burnout scale.<sup>24,25</sup>

### Predictor Variables

#### *Self-Stigma*

We measured self-stigma using the Self-Stigma of Seeking Help Scale,<sup>26</sup> a 10-item scale measuring a respondent's level of comfort or concern with regard to seeking psychological help from a therapist. The items are scored on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*) and the total score is the sum of all 10 items. Self-stigma was measured with items such as "I would feel inadequate if I went to a therapist for psychological help" and "Seeking psychological help would make me feel less intelligent." The scale demonstrated excellent internal reliability in the original study ( $\alpha = .91$ ).<sup>26</sup>

#### *Coping*

We measured coping strategies using the Brief COPE, a 28-item scale divided into three subscales: emotion-focused, problem-focused, and dysfunctional coping.<sup>27</sup> Response options ranged from 1 = *I haven't been doing this at all* to 4 = *I've been doing this a lot*. The total score for each subscale is the sum of included items, ranging from 10 to 40 for emotion-focused coping (e.g., "I accept the reality of the fact that it has happened," "I look for something good in what is happening"), 6 to 24 for problem-focused coping (e.g., "I concentrate my efforts on doing something about the situation I'm in," "I think hard about what steps to take"), and 12 to 48 for dysfunctional coping (e.g., "I give up trying to deal with it," "I turn to work or other activities to take my mind off things"). The scale has demonstrated acceptable internal reliability for the emotion-focused and dysfunctional coping scales ( $\alpha = .72$

and .75, respectively), and good internal reliability ( $\alpha = .84$ ) for the problem-focused scale.<sup>28</sup>

### Empathy

We measured empathy using the Davis Interpersonal Reactivity Index (IRI), a 28-item scale divided into four dimensions of empathy: fantasy, perspective taking, empathic concern, and personal distress.<sup>16</sup> Response options ranged from 1 = *does not describe me well* to 5 = *describes me very well*. The fantasy scale taps respondents' "tendency to imaginatively transpose oneself into fictional situations (e.g., books, movies, and plays)"<sup>16(p.11)</sup> and was measured with items such as "I daydream and fantasize, with some regularity, about things that might happen to me" and "I really get involved with the feelings of the characters in a novel." The perspective taking scale assesses the "ability or proclivity to shift perspectives" to step "outside the self when dealing with other people"<sup>16(p.11)</sup> and was measured with items such as "I try to look at everybody's side of a disagreement before I make a decision" and "I sometimes try to understand my friends better by imagining how things look from their perspective." The empathic concern scale "assesses the degree to which the respondent experiences feelings of warmth, compassion and concern for the observed individual"<sup>16(p.12)</sup> and was measured with items such as "When I see someone being taken advantage of, I feel kind of protective towards them" and "I would describe myself as a pretty soft-hearted person." The personal distress scale "measures the individual's own feelings of fear, apprehension and discomfort at witnessing the negative experiences of others"<sup>16(p.12)</sup> and was measured with items such as "I tend to lose control during emergencies" and "Being in a tense emotional situation scares me." The total score for each scale is the sum of the seven items included in that scale. The scale has demonstrated good internal reliability for all subscales ranging from .71 to .77.<sup>16</sup>

### Mindfulness

We measured mindfulness using the Five Facet Mindfulness Questionnaire,<sup>29</sup> a 38-item scale that assesses five facets of a general tendency to be mindful in daily life: observing, describing, acting with awareness, and having nonreactive and nonjudgmental perspectives of inner experience. Response options ranged from 1 = *never or very rarely true* to 5 = *very often or always true*. Mindfulness was measured with items such as "I'm good at finding words to describe my feelings" and "I perceive my feelings and emotions without having to react to them." A previous study found adequate to good internal consistency, with  $\alpha$  ranging from .75 to .9.<sup>29</sup>

### Data Analysis

All variables were examined before data analysis. They were adequately homoscedastic and linear, and they met the assumptions for multicollinearity. Skew and kurtosis statistics and normal probability plots showed the data were normally distributed. As outliers can have a significant effect on multiple regressions, outliers were examined. There was one outlier with a standardized residual greater than  $\pm 3.3$  and was therefore deleted.

Descriptive analyses, reliability analyses, and bivariate correlations between the three subscales were conducted to determine prevalence. After an examination of bivariate correlations involving all scales, multiple regression analyses were completed to examine associations of each of the three outcome variables (compassion satisfaction, burnout, and secondary traumatic stress) with models including the predictor variables (validated psychological measures) and demographic control variables (age, gender, employment history at a veterinary clinic, number of weeks of EMS placement completed). Inclusion criteria for the regression analyses were based on the results of the bivariate correlations, with all variables correlated with the examined outcome variable with a  $p$  value less than .2 included in the regression model.<sup>30</sup>

Gender and employment history at a veterinary clinic were coded as dummy variables (male = 0, female = 1; have worked at a veterinary clinic = 0, have not worked at a veterinary clinic = 1). Cases were excluded listwise when data were missing. Data were analyzed using the Statistical Package for the Social Sciences Version 22.0 for Windows.

## RESULTS

The majority of the respondents were female ( $n = 160$ , 83%) with an average age of 24.4 years ( $SD = 4.09$ ) and a range of 18–48 years. Clinical placement experience varied from 0 to 46 weeks (mean = 13.79,  $SD = 10.58$ ). A slight minority of respondents ( $n = 82$ , 43%) had worked in a veterinary practice.

### Reliability

In this sample, reliability was good for the compassion satisfaction and secondary traumatic scales ( $\alpha = .88$  and  $.84$ , respectively), and satisfactory for the burnout scale ( $\alpha = .70$ ). For the Five Facets of Mindfulness Scale, the current study found good to excellent internal reliability for the subscales: observing  $\alpha = .80$ , describing  $\alpha = .91$ , acting with awareness  $\alpha = .91$ , nonjudgmental mindfulness  $\alpha = .91$ , nonreactive mindfulness  $\alpha = .82$ . The Ways of Coping Scale demonstrated good internal reliability for the problem-focused scale ( $\alpha = .81$ ) and questionable internal reliability for the emotion-focused and dysfunctional coping scales ( $\alpha = .69$  and  $.66$ , respectively). The Self-Stigma of Seeking Help Scale demonstrated good internal reliability ( $\alpha = .88$ ). Finally, the IRI demonstrated good internal reliability for the fantasy and perspective taking scales ( $\alpha = .82$  and  $.85$ , respectively), and acceptable internal reliability for the empathic concern and personal distress scales ( $\alpha = .75$  and  $.77$ , respectively).

### Prevalence of Compassion Satisfaction and Compassion Fatigue

Table 2 summarizes the prevalence of compassion satisfaction, burnout, and secondary traumatic stress. The survey revealed 30% at high risk of burnout, 24% at high risk of secondary traumatic stress, and 21% reported low compassion satisfaction.

**Table 2:** Prevalence of compassion satisfaction, burnout, and secondary traumatic stress in a sample of Australian veterinary students

Pro-QOL variable	Low	Average	High
Compassion satisfaction	41 (21%)	111 (58%)	41 (21%)
Burnout	53 (28%)	82 (43%)	57 (30%)
Secondary traumatic stress	45 (23%)	101 (52%)	47 (24%)

### Bivariate Correlations between Outcome Variables

There was a positive correlation between secondary traumatic stress and burnout ( $r = .642, n = 192, p < .001$ ) and a negative correlation between compassion satisfaction and burnout ( $r = -.427, n = 192, p < .001$ ). There was no statistically significant correlation between secondary traumatic stress and compassion satisfaction.

### Bivariate Correlations between Outcome and Predictor Variables

Table 3 presents the bivariate correlations for the outcome variables with the predictor variables including the demographic controls to indicate the relative strength of the individual predictors. Compassion satisfaction was significantly correlated with problem-focused coping, emotion-focused coping, all mindfulness subscales except nonjudgmental mindfulness, all four empathy scales (fantasy, perspective taking, empathic concern, personal

distress), gender, and employment history at a veterinary clinic. Burnout was significantly correlated with self-stigma, dysfunctional coping, problem-focused coping, all five mindfulness scales except for describing mindfulness, personal distress, and employment history at a veterinary clinic. Secondary traumatic stress was significantly correlated with self-stigma, dysfunctional coping, acting with awareness, nonjudgmental and nonreactive mindfulness subscales, fantasy, empathic concern, personal distress, and gender. Age was not significantly correlated with any of the outcome variables. Dysfunctional coping was correlated with compassion satisfaction at a non-significant level ( $.05 < p < .20$ ) as were problem-focused coping, emotion-focused coping, perspective taking, and employment history at a veterinary clinic with secondary traumatic stress (all  $.05 < p < .20$ ). Consequently, these variables were retained in the multiple regression analyses.

After examining bivariate correlations (Table 3), data were analyzed using the “enter” method for multiple regression analyses (Table 4) to examine relationships between predictor and demographic control variables with each of the three outcome variables (compassion satisfaction, burnout, and secondary traumatic stress).

The total model predicting compassion satisfaction (Table 4, Column 3) included dysfunctional coping, problem-focused coping, emotion-focused coping, observing mindfulness, describing mindfulness, acting-with-awareness mindfulness, nonreactive mindfulness, all four empathy scales, gender, and employment history at a veterinary clinic, and explained 38% of the variance in scores ( $F[13, 153] = 7.208, p < .001$ ). Empathic concern ( $\beta = .183, p < .05$ ) and personal distress ( $\beta = -.196,$

**Table 3:** Bivariate correlation between outcome and predictor variables

Variable	Compassion satisfaction	Burnout	Secondary traumatic stress
Dysfunctional coping	-.098	.531 <sup>‡</sup>	.527 <sup>‡</sup>
Problem-focused coping	.435 <sup>‡</sup>	-.178*	.137
Emotion-focused coping	.326 <sup>‡</sup>	-.042	.130
Self-stigma	-.089	.159*	-.157*
Observing mindfulness	.340 <sup>‡</sup>	-.172*	-.010
Describing mindfulness	.248 <sup>†</sup>	-.061	-.036
Acting-with-awareness mindfulness	.165*	-.457 <sup>‡</sup>	-.368 <sup>‡</sup>
Nonjudgmental mindfulness	.084	-.407 <sup>‡</sup>	-.441 <sup>‡</sup>
Nonreactive mindfulness	.250 <sup>†</sup>	-.286 <sup>‡</sup>	-.161*
Fantasy IRI	.202 <sup>†</sup>	.078	.190 <sup>†</sup>
Perspective taking IRI	.294 <sup>‡</sup>	-.059	-.112
Empathic concern IRI	.314 <sup>‡</sup>	-.043	-.250 <sup>†</sup>
Personal distress IRI	-.233 <sup>†</sup>	.339 <sup>‡</sup>	.339 <sup>‡</sup>
Age	-.056	-.043	-.078
Gender	.169*	.047	.162*
Work	-.238 <sup>†</sup>	.184*	.098

\*  $p < .05$

†  $p < .01$

‡  $p < .001$

Underlined correlations have  $.05 < p < .2$

**Table 4:** Regression analysis of variables associated with compassion satisfaction, burnout, and secondary traumatic stress

Variable	Secondary traumatic stress		Burnout		Compassion satisfaction	
	B	$\beta$	B	$\beta$	B	$\beta$
Nonjudgmental mindfulness	-1.135	-.113	-1.470	-.148*	-	-
Nonreactive mindfulness	-.261	-.025	-1.252	-.124	1.409	.142
Observing mindfulness	-	-	-.961	-.096	.858	.089
Describing mindfulness	-	-	-	-	-.584	-.060
Acting-with-awareness mindfulness	-1.536	-.154*	-2.156	-.218†	.408	.706
Dysfunctional coping	2.938	.296‡	3.920	.397‡	-1.333	-.141
Problem-focused coping	1.126	.109	-1.261	-.123	1.637	.167
Emotion-focused coping	-.205	-.020	-	-	1.314	.135
Personal distress IRI	2.674	.254‡	.071	.007	-1.953	-.196*
Fantasy IRI	-.606	-.061	-	-	1.172	.124
Perspective taking IRI	1.195	.119	-	-	.114	.012
Empathic concern IRI	.970	.757	-	-	1.711	.183*
Self-stigma	1.378	.140*	.022	.002	-	-
Gender	1.710	.064	-	-	3.930	.156*
Age	-	-	-	-	-	-
Work in vet. clinic	2.034	.100	2.506	.124*	-3.395	-.175*
R <sup>2</sup> (adjusted R <sup>2</sup> )		.497 (.454)‡		.471 (.441)‡		.38 (.327)‡

\*  $p < .05$ †  $p < .01$ ‡  $p < .001$ 

$p < .05$ ) were the only predictor variables that were significantly associated with variation in compassion satisfaction scores. Participants higher in empathic concern and lower in personal distress had higher compassion satisfaction scores. Both gender ( $\beta = .156, p < .05$ ) and employment history at a veterinary clinic ( $\beta = -.175, p < .05$ ) significantly contributed to compassion satisfaction, with females and participants who had worked at a veterinary clinic reporting higher compassion satisfaction.

The total model predicting burnout (Table 4, Column 2) included self-stigma, dysfunctional coping, problem-focused coping, nonreactive mindfulness, nonjudgmental mindfulness, observing mindfulness, acting-with-awareness mindfulness, personal distress, and employment history at a veterinary clinic, and explained 47% of the variance in scores ( $F[9, 157] = 15.557, p < .001$ ). Dysfunctional coping ( $\beta = .397, p < .001$ ), acting-with-awareness mindfulness ( $\beta = -.218, p < .01$ ), and nonjudgmental mindfulness ( $\beta = -.148, p < .05$ ) were significantly associated with variation in burnout scores. Participants who had higher levels of dysfunctional coping and who were lower in acting-with-awareness and nonjudgmental mindfulness had higher burnout scores. Employment history at a veterinary clinic ( $\beta = .124, p < .05$ ) also contributed significantly to burnout, with participants who had no history of employment at a veterinary clinic reporting higher burnout.

The total model predicting secondary traumatic stress (Table 4, Column 1) included self-stigma, dysfunctional coping, problem-focused coping, emotion-focused coping, nonjudgmental mindfulness, nonreactive mindfulness, acting-with-awareness mindfulness, all four empathy scales,

gender, and employment history at a veterinary clinic, and explained 50% of the variance in scores ( $F[13, 153] = 11.624, p < .001$ ). Self-stigma ( $\beta = .140, p < .05$ ), dysfunctional coping ( $\beta = .296, p < .001$ ), acting-with-awareness mindfulness ( $\beta = -.154, p < .05$ ), and personal distress ( $\beta = .254, p < .001$ ) were significantly associated with variation in secondary traumatic stress scores. Participants higher in self-stigma, dysfunctional coping strategies, and personal distress and lower in mindfulness had higher secondary traumatic stress scores.

## DISCUSSION

The current study investigated compassion satisfaction, burnout, and secondary traumatic stress using the ProQOL measure in a sample of veterinary students in Australia. Aims for the study were twofold. First, the study sought to determine the prevalence of compassion satisfaction, burnout, and secondary traumatic stress within a population of Australian veterinary students. Second, the study sought to investigate the associations between validated measures of burnout, secondary traumatic stress, compassion satisfaction, self-stigma, coping, empathy, and mindfulness in Australian veterinary students. To our knowledge, this is the first study examining the relationships between psychological factors and compassion fatigue and compassion satisfaction in veterinary students.

### Prevalence of Compassion Satisfaction

Compassion satisfaction indicates positive feelings derived from helping others and 21% of respondents in this study reported high, 58% average, and 21% low satisfaction

scores. In previous studies, 27% of Doctor of Nursing Practice students reported high levels of compassion satisfaction, while 44% reported average levels, and 29% low levels of satisfaction.<sup>31</sup> Midwifery students showed 0% of students reported low compassion satisfaction, 45% average, and 56.4% high satisfaction scores<sup>11</sup> Stamm<sup>1</sup> states that those with lower compassion satisfaction scores have occupational problems or may derive their satisfaction elsewhere.

### Prevalence of Burnout

Burnout is one aspect of compassion fatigue, and occurs as a result of everyday occupational stressors. The respondents were asked to undertake the ProQOL questionnaire in regards to their EMS placements, and all students had at least 2 weeks of EMS experience or had worked in a veterinary practice. The high-stress environment of veterinary students has been established,<sup>32,33</sup> and the implication that 30% of students in this sample were at high risk for burnout indicates the possibility of an at-risk population. Published data using these cut-offs in student populations are limited. However, a 2015 study of over 100 British midwifery students showed not a single student reported a burnout score indicative of high risk.<sup>11</sup> In contrast, a study of Doctor of Nursing Practice students in the US reported 22% of students at a high risk of burnout.<sup>31</sup> The students in this category could be exhibiting signs typical of burnout, such as frustration and feelings of helplessness. Stamm<sup>1</sup> states that those experiencing burnout are ultimately likely to be feeling ineffective in their jobs. EMS placements are designed to help students learn and develop clinical skills. Students remain in the practice for a short time, up to 3 weeks, and thus are unlikely to feel as if they are effecting change in their workplace. This may be contributing to the high levels of burnout reported in this subset of students. There are significant implications for students experiencing burnout, especially in terms of their service provision,<sup>25</sup> not to mention impaired mental health and well-being.<sup>34</sup> Medical clinicians suffering from burnout have self-identified irritability leading to reduced levels of care for the patient.<sup>25</sup> Finally, burnout may be related to the development of depression, increased sick leave, and loss of work ability.<sup>34</sup>

The consequences of a high burnout score include feelings of inefficacy in one's work.<sup>1</sup> Veterinary degrees are known to have significant time commitments and rigid structures that may largely dictate the personal life of the student.<sup>35</sup> Veterinary students may experience a lack of autonomy, which in turn contributes to burnout. It is important to consider that burnout is a multi-dimensional construct, and there may be many contributors to the levels reported in this study.

### Prevalence of Secondary Traumatic Stress

The second aspect of compassion fatigue, secondary traumatic stress, is a state of psychological distress, and tends to occur more suddenly than the gradual progression of burnout.<sup>1</sup> At the time of the survey, 24% of students

were at high risk for secondary traumatic stress, with 52% at medium risk and 23% at low risk. To the authors' knowledge, this is the first empirical demonstration that veterinary students may experience secondary traumatic stress, and it indicates secondary exposure to traumatic events. The evidence that almost a quarter of this sample is at high risk needs to be addressed. Studies examining student health care professional populations have reported 0%–60% of students falling into the "high risk" category.<sup>11,24,31</sup> This broad range makes it difficult to make meaningful comparisons. However, the demonstration that some students are at high risk of secondary traumatic stress indicates the need for intervention.

### Correlations between Variables

A statistically significant positive correlation existed between burnout and secondary traumatic stress. Stamm<sup>1</sup> reports that there is shared variance between the two scales ( $r = .58$ ). This is close to the value reported in the current study of  $r = .642$ , and this is most likely due to the distress that is common to both conditions. There was a negative correlation between compassion satisfaction and burnout. This relationship suggests that compassion satisfaction might be protective or, alternatively, that clinicians are able to enjoy the positive aspects of their roles more fully when they are not experiencing burnout.

## DEMOGRAPHIC AND PSYCHOLOGICAL FACTORS ASSOCIATED WITH PROFESSIONAL QUALITY OF LIFE

### Empathy, Compassion Satisfaction, and Secondary Traumatic Stress

Empathy is seen as critical to a helping relationship and involves accurately feeling with the client while at the same time maintaining an emotionally separate sense of self. The positive association between empathic concern and compassion satisfaction suggests that when veterinary students direct their empathy solely toward the client, this may lead the students to feel successful and satisfied regarding their role as a helper. This could lead them to believe they can make a difference in their clients' lives and ultimately to derive pleasure from performing their duty as a helper. Empathic concern has been linked to higher compassion satisfaction in physicians, with suggestions that a certain level of empathic concern is required to make the helping experience a positive one for both the helper and the client.<sup>36,37</sup>

Personal distress, another facet of empathy, is described as "self-oriented" feelings of discomfort, anxiety, and unease in tense emotional situations.<sup>16</sup> Personal distress is not a prosocial behavior, but instead a behavior aimed at relieving one's own distress rather than the distress of the person in need.<sup>16</sup> The psychological preoccupation rests with regulating one's own emotions, namely anxiety, when confronted with distress in the other. However, the self-regulation strategies are not entirely effective, leading to personal distress. The negative association between personal distress and compassion satisfaction suggests that when veterinary students direct more empathy toward

themselves for the distress they are experiencing than toward the client, this may lead students to feel unhappy or dissatisfied in their role as a helper. This could cause students to view themselves as ineffective caregivers and to question their ability to provide for their clients in the veterinary profession. Personal distress predicts compassion satisfaction in clinical social workers,<sup>38</sup> indicating that the ability of helpers to regulate their emotions in a tense or painful situation is necessary to be able to provide any benefit to the person in distress.

In the current study, personal distress was positively associated with secondary traumatic stress, a finding consistent with a previous study involving clinical social workers.<sup>38</sup> This suggests witnessing that another's trauma may trigger a self-oriented empathic response accompanied by negative emotional arousal in the veterinary student. Conversely, adopting a less well-regulated empathic style, whereby one becomes anxious in the face of a client's distress and seeks to alleviate one's own discomfort, may lead to an increased vulnerability to secondary traumatic stress reactions. While both arise from empathy, personal distress is differentiated from empathic concern predominantly in the goal, in terms of the focus of distress alleviation (self versus other), and outcomes for both the helper and clinician. Veterinarians who have positive interactions with clients, implying an altruistic empathic helping relationship, report higher satisfaction in their role.<sup>39</sup> Staying with the client's distress and seeking to alleviate the client's suffering, rather than their own, seems critical to satisfaction.

### **Coping, Compassion Fatigue, and Burnout**

Dysfunctional coping was positively associated with both burnout and secondary traumatic stress. These associations suggest that veterinary students who engage in dysfunctional coping strategies, such as denial, self-blame, and behavioral disengagement, may suffer the negative consequences of compassion fatigue. Such consequences, including emotional exhaustion and feelings of depression and hopelessness, reduce the positive effects of their role. Dysfunctional coping strategies, particularly self-blame and self-distraction, are significantly associated with burnout and secondary traumatic stress in emergency workers.<sup>40</sup> It has been suggested that a flexible approach to coping (i.e., knowing when to adopt problem-focused strategies or emotion-focused strategies) is required to manage stress in difficult or traumatic situations.<sup>41</sup>

### **Mindfulness and Compassion Fatigue**

This study found that two facets of mindfulness, nonjudgmental and acting-with-awareness mindfulness, were significantly associated with compassion satisfaction, burnout, and secondary traumatic stress. Nonjudgmental mindfulness was related to burnout in so much as those students who reported higher burnout also reported lower nonjudgmental mindfulness. Thus veterinary students who are less able to observe and evaluate situations while reserving judgment and criticism may begin to feel "out of touch" and trapped due to becoming overwhelmed by

their emotions in stressful or traumatic situations. Conversely, being able to increase their awareness and acceptance of inner emotional states without becoming distressed or distracted by their emotions could protect them against compassion fatigue. Similarly, students who bring their full awareness and undivided attention to their current experiences are more likely to stay present in situations that may be traumatic or extremely stressful. Secondary traumatic stress is experienced upon hearing the traumatic experiences of another and internalizing them in some manner. Staying present with the current experience of listening and empathizing with the story of the other individual is likely protective. In pediatric residents, mindfulness is associated with higher resilience and less emotional exhaustion, a symptom of compassion fatigue.<sup>42</sup>

### **Self-Stigma and Secondary Traumatic Stress**

This study found self-stigma to be positively associated with secondary traumatic stress. Thus veterinary students who are uncomfortable or concerned about seeking psychological help from a therapist may be unable to separate their private life from their life as a helper and may experience work-related secondary trauma as a result. This association could also be reversed; secondary traumatic stress may be the factor that results in self-stigma. Individuals are less likely to seek help if they fear embarrassment.<sup>26</sup> It is possible that students feel embarrassed or self-conscious regarding the secondary traumatic stress they are experiencing, as the traumatic event did not directly happen to them, and they may find it difficult to explain their trauma to others.

### **Control Variables, Compassion Satisfaction, and Burnout**

Although the focus of this study was the association between psychological factors and compassion satisfaction, burnout, and secondary traumatic stress, two control variables were also associated with these measures. Female gender was positively associated with compassion satisfaction. In a previous study, higher compassion satisfaction scores were found in female critical care nurses, although the authors suggested cautious interpretation of the finding due to the small proportion of male participants.<sup>43</sup> The current study similarly had a small number of male participants ( $n = 33$ , 17.1%). Further research is required to better understand this association.

Veterinary students who had worked at a veterinary clinic reported higher compassion satisfaction and lower burnout rates than students who had no history of employment at a veterinary clinic. This suggests that students working in practice may be more likely to feel satisfaction regarding the "helping" aspects of their work and achieve a sense of self-actualization in their role. Furthermore, students who are employed in the veterinary setting may have well-delineated roles in the veterinary team as compared to those in placements or in clinical rotations who visit for very brief periods. Members of the veterinary team who lack clarity about their individual responsibilities may experience stress and develop burnout as a



result of this uncertainty.<sup>6</sup> Therefore, it is plausible that because veterinary students have a well-defined role in the veterinary team at their place of employment, they may be able to gain satisfaction from their work and feel they have the ability to effectively contribute to the work setting. Spending consistent time in a work setting also increases opportunities to develop relationships with clients, patients, and other staff. Specifically, collegial relationships may be a key source of social support in promoting resilience. Social support has been shown to reduce the incidence of burnout in nurses.<sup>44</sup> A qualitative study is recommended to investigate the potential factors influencing the professional quality of life of veterinary students working in practice.

### Implications for the Veterinary Curriculum

Overall, this study presents useful insight into the possible effects of psychological factors on veterinary students' experiences of compassion satisfaction, burnout, and secondary traumatic stress. The next logical step is to evaluate the potential efficacy of an intervention program that incorporates general approaches to preventing and managing burnout and secondary traumatic stress while increasing compassion satisfaction. Further, given the findings of this study, future interventions might warrant the inclusion of strategies to enhance empathy, promote adaptive coping strategies, reduce self-stigma, and increase mindfulness to protect against the deleterious effects of compassion fatigue and to promote compassion satisfaction among veterinary students.

### Approaches to Preventing and Managing Burnout and Secondary Traumatic Stress while Increasing Compassion Satisfaction

Strategies designed to help students prevent and, if necessary, ameliorate the effects of burnout are warranted. Previous studies investigating burnout in veterinary students have also made these recommendations.<sup>4</sup> Maslach<sup>45</sup> has reported that situational factors, or chronic job stressors, are more often associated with burnout than demographic differences. A study of burnout among Finnish veterinarians consequently recommended identification of these potential factors to treat and/or prevent burnout.<sup>46</sup>

Secondary traumatic stress is a separate construct from burnout, and requires separate prevention and treatment methods. Figley<sup>8</sup> advises that those at high risk need guidance, but he also states the condition is "highly treatable" and outlines four primary interventions to treat this distressing psychological condition. These interventions include educating individuals on compassion fatigue, desensitizing them to traumatic stressors, balancing the amount of exposure to trauma, and improving social support.<sup>47</sup> Rank et al.<sup>48</sup> developed a training module specific to non-human-animal care professionals (NACPs). These "training as treatment" seminars were specifically designed to ameliorate the effects of compassion fatigue specific to NACPs, as identified during focus groups. The training includes an accelerated recovery program, which is a 2-day intensive course educating participants

on the causes, symptoms, treatment, and prevention of compassion fatigue. Peer-to-peer accelerated recovery techniques involve participants learning how to communicate with their colleagues about compassion fatigue. The training program for compassion fatigue in non-human-animal care proved effective, increasing compassion satisfaction and decreasing secondary traumatic stress as measured by the ProQOL, although not affecting levels of burnout.

### Enhancing Empathy

An interesting approach has been trialed in the medical education system to increase empathic communication in medical students through the use of virtual patients.<sup>49</sup> The authors suggested that the lack of pressure and time constraints on students to respond empathically to the virtual patient allowed students to focus on expressing their empathy. This could be useful in training veterinary students to respond empathically to distressed clients. Professional training programs targeting the facets of empathy as defined by the IRI<sup>16</sup> have had promising results, increasing resilience among members of a pediatric oncology service through the use of narrative training.<sup>50</sup> Empathic concern scores of participants increased at the completion of the intervention. The current study showed a relationship between compassion satisfaction and empathic concern and personal distress. Therefore, educational strategies including narrative training aimed at delineating and implementing multi-dimensional approaches to empathic communication may help support students to develop appropriately empathic and sustaining relationships with others.

### Promoting Adaptive Coping Strategies and Reducing Self-Stigma

Adaptive coping strategies, such as problem-focused and emotion-focused strategies, are a key component in promoting health and preventing burnout in the veterinary profession.<sup>41</sup> Education regarding different coping strategies may lead to fewer maladaptive coping strategies such as alcohol or substance abuse or self-isolation in times of stress. Reduction of stigma surrounding psychological health issues is also important and could be achieved by encouraging students to have open discussions in a nonjudgmental environment about how traumatic situations affected their well-being. Implementation of these existing strategies may prove useful in the veterinary curriculum. However, more extensive research should be conducted into what causes veterinary students to feel reluctant to seek psychological help and to develop intervention or training programs to reduce self-stigma.

### Enhancing Mindfulness

The usefulness of mindfulness training and intervention programs is well described in the literature.<sup>51-53</sup> Mindfulness may play a significant role in reducing not only compassion fatigue but also the experience of personal distress, perhaps through enhanced self-regulation.<sup>54</sup> However, to the authors' knowledge, there have been no documented mindfulness training programs implemented in

the veterinary profession. Future research should be conducted to determine the impact of mindfulness on compassion fatigue in veterinarians and veterinary students and to design a targeted intervention or training program for the profession. Mindfulness may also increase self-compassion,<sup>13</sup> or being forgiving of self-perceived inadequacies. High levels of trait perfectionism, related to high self-perceived inadequacies and the resulting self-criticism, were related to poorer psychological health in a sample of Australian veterinarians.<sup>55</sup> Learning to be less self-critical with more self-compassion seems to be a valuable mindset for veterinarians.

### Limitations

This was a cross-sectional survey and causality cannot be determined from this research design. The cross-sectional design also means measurement at only one point in time. Stamm<sup>1</sup> reports that differing scores in subsequent testing reflect changes in the person. Chigerwe et al.<sup>4</sup> showed that levels of burnout in American veterinary students fluctuated throughout the year, although the Maslach Burnout Inventory was used in place of the ProQOL. As this study was not qualitative, it is impossible to precisely determine what factors contributed to student burnout. Many possibilities exist, including the immense workload experienced in veterinary school. Demanding entry requirements mean that the population most likely embodies certain character traits, and some of these individual characteristics may influence professional quality of life. A longitudinal study that will follow cohorts across time, potentially examining scores during didactic and clinical study periods, is recommended to assess potential differences in ProQOL scores and the factors associated with their change.

The low response rate (31%), which was reduced further to 23% due to inclusion criteria, should also be considered a limitation. In addition, as cases were excluded listwise when data were missing, this could have produced potential risks to internal validity by raising the probability of biased estimates (e.g., full cases may be unrepresentative of the complete sample).

There is a lack of agreement among researchers regarding exact terminology of some of the constructs investigated in this study (e.g., the multifaceted experience of empathy), which lessens the comparability of these findings to other research. Due to the questionable reliability of the emotion-focused coping ( $\alpha = .69$ ) and dysfunctional coping ( $\alpha = .66$ ) scales in this study, these scales should be interpreted with caution.

There may be interactions between the control variables and the psychological factors explored in this study that were not explicitly examined as a part of this research. Further investigation into these interactions may lead to a more complete understanding of the influences of psychological factors on the experiences of compassion satisfaction, burnout, and secondary traumatic stress in Australian veterinary students.

Limitations may exist due to the use of the ProQOL in this setting. The ProQOL was designed for use in helping professions involving human patients or clients. Conse-

quently, the measure does not take into account the triadic relationship involving professional, client, and non-human patient. Regular patient euthanasia also occurs in veterinary medicine, and this may or may not be a source of moral distress for the veterinarian and veterinary student. These factors may contribute to burnout or secondary traumatic stress, but are not necessarily captured in the ProQOL. Interestingly, several of the ProQOL statements may be difficult to answer in the context of the non-human patient (e.g., "I think I might have been affected by the traumatic stress of those I help"). When applied to other helping professions, this refers to a human patient or client. In the veterinary setting, however, respondents could extrapolate this to animal patients, which may have affected the burnout and secondary traumatic stress scores. Similarly, for the compassion satisfaction subscale, items such as "I get satisfaction from being able to help 'people'" do not enable the respondent to report their feelings of satisfaction in relation to working with animals. Presumably, most veterinary students enter the profession with a love of animals and a desire to help and care for them. Therefore, this is likely a factor associated with compassion satisfaction that is not currently captured in the measure. Further investigation is required, and future studies may involve modification of the instrument for relevance to non-human care.

### CONCLUSION

Students establish self-care and coping patterns that are likely to persist into their professional careers. In light of established mental health difficulties and acknowledged stressors in the profession, it is important to further investigate the influence of psychological factors on compassion satisfaction, burnout, and secondary traumatic stress. In addition, it is apparent that students experience low compassion satisfaction, high secondary traumatic stress, and high burnout. As a result, certain emotional characteristics and coping strategies may be identified as potential targets for intervention to minimize the frequency and negative impact of burnout and secondary traumatic stress in veterinary students. A focus on enhancing these self-care capacities within veterinary medical education could lead to enhanced resiliency among students, and hence veterinarians, leading to positive outcomes for veterinary professionals and the animals they serve into the future.

### REFERENCES

- 1 Stamm BH. The concise ProQOL manual [Internet]. Pocatello, ID: ProQOL.org; 2010 [cited 2016 Dec 17]. Available from: [http://www.proqol.org/uploads/ProQOL\\_Concise\\_2ndEd\\_12-2010.pdf](http://www.proqol.org/uploads/ProQOL_Concise_2ndEd_12-2010.pdf).
- 2 Moore IC, Coe JB, Adams CL, et al. The role of veterinary team effectiveness in job satisfaction and burnout in companion animal veterinary clinics. *J Am Vet Med Assoc*. 2014;245(5):513–24. Medline:25148093 <http://dx.doi.org/10.2460/javma.245.5.513>.
- 3 Hatch PH, Winefield HR, Christie BA, et al. Workplace stress, mental health, and burnout of veterinarians in Australia. *Aust Vet J*. 2011;89(11):460–8.

- Medline:22008127 <http://dx.doi.org/10.1111/j.1751-0813.2011.00833.x>.
- 4 Chigerwe M, Boudreaux KA, Ilkiw JE. Assessment of burnout in veterinary medical students using the Maslach Burnout Inventory-Educational Survey: a survey during two semesters. *BMC Med Educ*. 2014;14(1):255. Medline:25429983 <http://dx.doi.org/10.1186/s12909-014-0255-4>.
  - 5 Cohen SP. Compassion fatigue and the veterinary health team. *Vet Clin North Am Small Anim Pract*. 2007;37(1):123-34. Medline:17162116 <http://dx.doi.org/10.1016/j.cvsm.2006.09.006>.
  - 6 Moffett J, Matthew S, Fawcett A. Building career resilience. In *Pract*. 2015;37(1):38-41. <http://dx.doi.org/10.1136/inp.g3958>.
  - 7 Fritschi L, Morrison D, Shirangi A, et al. Psychological well-being of Australian veterinarians. *Aust Vet J*. 2009;87(3):76-81. Medline:19245615 <http://dx.doi.org/10.1111/j.1751-0813.2009.00391.x>.
  - 8 Figley CR. *Compassion fatigue: coping with secondary traumatic stress in those who treat the traumatized*. New York: Brunner Mazel; 1995.
  - 9 Crumpei I, Dafinoiu I. Secondary traumatic stress in medical students. In: Baskan GA, Ozdamli F, Kanbul S, Ozcan D, editors. *4th World Conference on Educational Sciences*; 2012 Feb 2-5; Barcelona, Spain. Amsterdam: Elsevier Science; 2012. p. 1465-9.
  - 10 Asfour H, Ramadan FH. Posttraumatic stress among undergraduate emergency nursing students. *J Am Sci*. 2011;7(6):997-1004.
  - 11 Beaumont E, Durkin M, Martin CJH, et al. Compassion for others, self-compassion, quality of life and mental well-being measures and their association with compassion fatigue and burnout in student midwives: a quantitative survey. *Midwifery*. 2016;34:239-44. Medline:26628352 <http://dx.doi.org/10.1016/j.midw.2015.11.002>.
  - 12 Brown KW, Ryan RM. The benefits of being present: mindfulness and its role in psychological well-being. *J Pers Soc Psychol*. 2003;84(4):822-48. Medline:12703651 <http://dx.doi.org/10.1037/0022-3514.84.4.822>.
  - 13 Neff KD. The development and validation of a scale to measure self-compassion. *Self Ident*. 2003;2(3):223-50. <http://dx.doi.org/10.1080/15298860309027>.
  - 14 Thomas JT. *Intrapsychic predictors of professional quality of life: mindfulness, empathy, and emotional separation [dissertation]*. Lexington (KY): University of Kentucky; 2011.
  - 15 Galantino ML, Vaime M, Maguire M, et al. Association of psychological and physiological measures of stress in health-care professionals during an 8-week mindfulness meditation program: mindfulness in practice. *Stress Health*. 2005;21(4):255-61. <http://dx.doi.org/10.1002/smi.1062>.
  - 16 Davis MHJ. A multidimensional approach to individual differences in empathy. *JSAS Cat Sel Doc Psychol [Internet]*. 1980;10:1-19. Available from: [http://www.uv.es/~friasnav/Davis\\_1980.pdf](http://www.uv.es/~friasnav/Davis_1980.pdf).
  - 17 Zahn-Waxler C, Klimes-Dougan B, Slattery MJ. Internalizing problems of childhood and adolescence: prospects, pitfalls, and progress in understanding the development of anxiety and depression. *Dev Psychopathol*. 2000;12(3):443-66. Medline:11014747 <http://dx.doi.org/10.1017/S0954579400003102>.
  - 18 McArthur ML, Fitzgerald JR. Companion animal veterinarians' use of clinical communication skills. *Aust Vet J*. 2013;91(9):374-80. Medline:23980830 <http://dx.doi.org/10.1111/avj.12083>.
  - 19 Chikovani G, Babuadze L, Iashvili N, et al. Empathy costs: negative emotional bias in high empathisers. *Psychiatry Res*. 2015;229(1-2):340-6. Medline:26235473 <http://dx.doi.org/10.1016/j.psychres.2015.07.001>.
  - 20 Coolidge FL, Segal DL, Hook JN, et al. Personality disorders and coping among anxious older adults. *J Anxiety Disord*. 2000;14(2):157-72. Medline:10864383 [http://dx.doi.org/10.1016/S0887-6185\(99\)00046-8](http://dx.doi.org/10.1016/S0887-6185(99)00046-8).
  - 21 Griffith JL, Kohrt BA. Managing stigma effectively: what social psychology and social neuroscience can teach us. *Acad Psychiatry*. 2016;40(2):339-47. Medline:26162463 <http://dx.doi.org/10.1007/s40596-015-0391-0>.
  - 22 Pickles KJ, Rhind SM, Miller R, et al. Potential barriers to veterinary student access to counselling and other support systems: perceptions of staff and students at a UK veterinary school. *Vet Rec*. 2012;170(5):124. Medline:22186377 <http://dx.doi.org/10.1136/vr.100179>.
  - 23 Siebert DC. Personal and occupational factors in burnout among practicing social workers: implications for researchers, practitioners, and managers. *J Soc Serv Res*. 2006;32(2):25-44. [http://dx.doi.org/10.1300/J079v32n02\\_02](http://dx.doi.org/10.1300/J079v32n02_02).
  - 24 Mason HD, Nel JA. Compassion fatigue, burnout and compassion satisfaction: prevalence among nursing students. *J Psychol Afr*. 2012;22(3):451-5.
  - 25 Dasan S, Gohil P, Cornelius V, et al. Prevalence, causes and consequences of compassion satisfaction and compassion fatigue in emergency care: a mixed-methods study of UK NHS consultants. *Emerg Med J*. 2015;32(8):588-94. Medline:25248545 <http://dx.doi.org/10.1136/emered-2014-203671>.
  - 26 Vogel DL, Wade NG, Haake S. Measuring the self-stigma associated with seeking psychological help. *J Couns Psychol*. 2006;53(3):325-37. <http://dx.doi.org/10.1037/0022-0167.53.3.325>.
  - 27 Carver CS. You want to measure coping but your protocol's too long: consider the brief COPE. *Int J Behav Med*. 1997;4(1):92-100. Medline:16250744 [http://dx.doi.org/10.1207/s15327558ijbm0401\\_6](http://dx.doi.org/10.1207/s15327558ijbm0401_6).
  - 28 Cooper C, Katona C, Livingston G. Validity and reliability of the brief COPE in carers of people with dementia: the LASER-AD Study. *J Nerv Ment Dis*. 2008;196(11):838-43. Medline:19008735 <http://dx.doi.org/10.1097/NMD.0b013e31818b504c>.
  - 29 Baer RA, Smith GT, Hopkins J, et al. Using self-report assessment methods to explore facets of mindfulness. *Assessment*. 2006;13(1):27-45. Medline:16443717 <http://dx.doi.org/10.1177/1073191105283504>.
  - 30 Maldonado G, Greenland S. Simulation study of confounder-selection strategies. *Am J Epidemiol*. 1993;138(11):923-36. Medline:8256780

- 31 Kulesa KC. Risk for compassion fatigue among doctor of nursing practice students [dissertation]. Tucson (AZ): University of Arizona; 2014.
- 32 Kogan LR, McConnell SL, Schoenfeld-Tacher R. Veterinary students and non-academic stressors. *J Vet Med Educ.* 2005;32(2):193–200. Medline:16078171 <http://dx.doi.org/10.3138/jvme.32.2.193>.
- 33 McLennan MW, Sutton RH. Stress in veterinary science students: a study at the University of Queensland. *J Vet Med Educ.* 2005;32(2):213–8. Medline:16078173 <http://dx.doi.org/10.3138/jvme.32.2.213>.
- 34 Pranjic N, Males-Bilic L. Work ability index, absenteeism and depression among patients with burnout syndrome. *Mater Sociomed.* 2014;26(4):249–52. Medline:25395887 <http://dx.doi.org/10.5455/msm.2014.249-252>.
- 35 Zenner D, Burns GA, Ruby KL, et al. Veterinary students as elite performers: preliminary insights. *J Vet Med Educ.* 2005;32(2):242–8. Medline:16078178 <http://dx.doi.org/10.3138/jvme.32.2.242>.
- 36 Gleichgerrcht E, Decety J. The relationship between different facets of empathy, pain perception and compassion fatigue among physicians. *Front Behav Neurosci.* 2014;8:243. Medline:25071495 <http://dx.doi.org/10.3389/fnbeh.2014.00243>.
- 37 Gleichgerrcht E, Decety J. Empathy in clinical practice: how individual dispositions, gender, and experience moderate empathic concern, burnout, and emotional distress in physicians. *PLoS One.* 2013;8(4):e61526. Medline:23620760 <http://dx.doi.org/10.1371/journal.pone.0061526>.
- 38 Thomas J. Association of personal distress with burnout, compassion fatigue, and compassion satisfaction among clinical social workers. *J Soc Serv Res.* 2013;39(3):365–79. <http://dx.doi.org/10.1080/01488376.2013.771596>.
- 39 Shaw JR, Adams CL, Bonnett BN, et al. Veterinarian satisfaction with companion animal visits. *J Am Vet Med Assoc.* 2012;240(7):832–41. Medline:22443436 <http://dx.doi.org/10.2460/javma.240.7.832>.
- 40 Cicognani E, Pietrantonio L, Palestini L, et al. Emergency workers' quality of life: the protective role of sense of community, efficacy beliefs and coping strategies. *Soc Indic Res.* 2009;94:449. <http://dx.doi.org/10.1007/s11205-009-9441-x>.
- 41 Bartram D, Gardner D. Coping with stress. *In Pract.* 2008;30(4):228–31. <http://dx.doi.org/10.1136/inpract.30.4.228>.
- 42 Olson K, Kemper KJ, Mahan JD. What factors promote resilience and protect against burnout in first-year pediatric and medicine-pediatric residents? *J Evid Based Complementary Altern Med.* 2015;20(3):192–8. Medline:25694128 <http://dx.doi.org/10.1177/2156587214568894>.
- 43 Sacco TL, Ciurzynski SM, Harvey ME, et al. Compassion satisfaction and compassion fatigue among critical care nurses. *Crit Care Nurse.* 2015;35(4):32–42. Medline:26232800 <http://dx.doi.org/10.4037/ccn2015392>.
- 44 Eastburg MC, Williamson M, Gorsuch R, et al. Social support, personality, and burnout in nurses. *J Appl Soc Psychol.* 1994;24(14):1233–50. <http://dx.doi.org/10.1111/j.1559-1816.1994.tb00556.x>.
- 45 Maslach C, Jackson SE. The measurement of experienced burnout. *J Occup Behav.* 1981;2(2):99–113. <http://dx.doi.org/10.1002/job.4030020205>.
- 46 Reijula K, Räsänen K, Hämäläinen M, et al. Work environment and occupational health of Finnish veterinarians. *Am J Ind Med.* 2003;44(1):46–57. Medline:12822135 <http://dx.doi.org/10.1002/ajim.10228>.
- 47 Figley CR. Compassion fatigue: psychotherapists' chronic lack of self care. *J Clin Psychol.* 2002;58(11):1433–41. Medline:12412153 <http://dx.doi.org/10.1002/jclp.10090>.
- 48 Rank M, Zapananick T, Gentry E. Nonhuman-animal care compassion fatigue: training as treatment. *Best Practices Ment Health.* 2009;5(2):40.
- 49 Kleinsmith A, Rivera-Gutierrez D, Finney G, et al. Understanding empathy training with virtual patients. *Comput Human Behav.* 2015;52:151–8. Medline:26166942 <http://dx.doi.org/10.1016/j.chb.2015.05.033>.
- 50 Sands SA, Stanley P, Charon R. Pediatric narrative oncology: interprofessional training to promote empathy, build teams, and prevent burnout. *J Support Oncol.* 2008;6(7):307–12. Medline:18847073
- 51 Fortney L, Luchterhand C, Zakletskaia L, et al. Abbreviated mindfulness intervention for job satisfaction, quality of life, and compassion in primary care clinicians: a pilot study. *Ann Fam Med.* 2013;11(5):412–20. Medline:24019272 <http://dx.doi.org/10.1370/afm.1511>.
- 52 Hassed C, de Lisle S, Sullivan G, et al. Enhancing the health of medical students: outcomes of an integrated mindfulness and lifestyle program. *Adv Health Sci Educ Theory Pract.* 2009;14(3):387–98. Medline:18516694 <http://dx.doi.org/10.1007/s10459-008-9125-3>.
- 53 Flook L, Goldberg SB, Pinger L, et al. Mindfulness for teachers: a pilot study to assess effects on stress, burnout and teaching efficacy. *Mind Brain Educ.* 2013;7(3):182–95. Medline:24324528 <http://dx.doi.org/10.1111/mbe.12026>.
- 54 Thomas J. Does personal distress mediate the effect of mindfulness on professional quality of life? *Adv Soc Work.* 2012;13(3):561–85.
- 55 Crane MF, Phillips JK, Karin E. Trait perfectionism strengthens the negative effects of moral stressors occurring in veterinary practice. *Aust Vet J.* 2015;93(10):354–60. Medline:26412116 <http://dx.doi.org/10.1111/avj.12366>.

## AUTHOR INFORMATION

**Michelle L. McArthur**, BA(Psych) Hons, DClinPsych, is a Senior Lecturer in the School of Animal and Veterinary Sciences, University of Adelaide, Roseworthy, SA 5371, Australia. Email: michelle.mcarthur@adelaide.edu.au. Her research interests include communication in veterinary medicine, human–animal relationships, and veterinary professionals' mental health and well-being.

**Jena R. Andrews** is a Doctor of Veterinary Medicine student at the School of Animal and Veterinary Sciences, University of Adelaide, Roseworthy, SA 5371, Australia. Email: jena.andrews@student.adelaide.edu.au. She is interested in exploring ways to help veterinary students cope with the many demands and stressors they face both in their academic studies and in the workplace.

**Conor Brand** is a Doctor of Veterinary Medicine student in the School of Animal and Veterinary Science, University of Adelaide, Roseworthy, SA 5371, Australia. Email: conor.brand@student.adelaide.edu.au. As well as being interested in student mental health and welfare, he is also interested in pathology and wildlife medicine.

**Susan J. Hazel**, BVSc, BSc(Vet), GradCert(Public Health), GradCert(Higher Ed), PhD, MANZCVS(Animal Welfare), is a Senior Lecturer in the School of Animal and Veterinary Sciences, University of Adelaide, Roseworthy, SA 5371, Australia. Her research interests include education, human–animal interaction, and animal welfare.