

# Evaluation of team effectiveness and personal empathy for associations with professional quality of life and job satisfaction in companion animal practice personnel

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## OBJECTIVE

To examine variables of veterinary team effectiveness and personal empathy for associations with professional quality of life (ie, compassion satisfaction, burnout, and secondary traumatic stress) and job satisfaction in companion animal practice personnel.

## DESIGN

Cross-sectional survey.

## SAMPLE

Data from 232 surveys completed by personnel from 10 companion animal veterinary practices in 2 regions of the United States between April 7 and December 20, 2016.

## PROCEDURES

Online surveys were used to collect practice-level data (eg, practice type, setting, and staffing) and individual-level data (eg, demographics, job position, and years in the position and profession). Instruments used in developing the surveys included the Team Effectiveness Instrument, Davis Interpersonal Reactivity Index, Professional Quality of Life Scale, and a measure for job satisfaction. Data were evaluated for associations with professional quality of life and job satisfaction.

## RESULTS

Individual engagement was positively associated with job satisfaction, negatively associated with secondary traumatic stress, and moderated by levels of personal distress for compassion satisfaction and burnout. Toxic team environment was positively associated with burnout and negatively associated with job satisfaction. Empathetic concern and personal distress were both positively associated with secondary traumatic stress. Empathetic concern was moderated by team engagement for compassion satisfaction.

## CONCLUSIONS AND CLINICAL RELEVANCE

Results indicated that variables influencing professional quality of life and job satisfaction were multimodal and included aspects of team effectiveness and empathy; therefore, workplace strategies that enhance individual and team engagement and mitigate toxic team environments could potentially improve professional quality of life and job satisfaction in veterinary personnel. (*J Am Vet Med Assoc* 2019;254:1204–1217)

Identifying factors that predispose individuals to psychological distress, depression, or suicidal thoughts during their veterinary careers is important for veterinary team health, client service, and animal well-being.<sup>1–3</sup> Equally important is examining risk factors for burnout, stress, and job satisfaction to maintain and improve veterinary team mental health.<sup>1,4</sup> Current research focuses on resilience strategies for the health and well-being of veterinary professionals<sup>5–8</sup>; however, most existing research focuses on preparing veterinary

students for the pressures and stresses of veterinary education.<sup>9–12</sup> Broadening research to explore coping strategies for all veterinary team members is vital to the long-term wellness of the veterinary profession.

Professional quality of life is a measure of an individual's well-being, specifically in relation to the person's work in helping others, and is made up of 3 components: compassion satisfaction, burnout, and secondary traumatic stress.<sup>13</sup> Exploring professional quality of life provides information that could be used to develop strategies that support care providers with potential benefits for the work and home environments.<sup>13</sup> Another critical outcome is job satisfaction, which in health care is associated with positive patient outcomes<sup>14</sup> and the physical and the mental health of employees.<sup>15</sup>

## ABBREVIATIONS

CI	Confidence interval
IRI	Interpersonal Reactivity Index
ProQOL	Professional Quality of Life Scale
TEI	Team Effectiveness Instrument

In human medicine, team effectiveness plays a crucial role in individual well-being<sup>16,17</sup> and patient care outcomes.<sup>18-20</sup> Job satisfaction, compassion satisfaction, and burnout differ among employee groups and hospital departments<sup>21,22</sup>; however, a team approach in human medicine decreases burnout, increases job satisfaction, and improves employee retention.<sup>23</sup>

An effective veterinary team relies on strong communication among its members, values its employees and their skills, discourages toxic attitudes, and takes a team-focused approach.<sup>24,25</sup> Nontoxic veterinary team environments have been associated with increased reports of job satisfaction and decreased reports of burnout.<sup>24</sup> Veterinary teams have various duties and stressors, ranging from demands of day-to-day job responsibilities to exposure to client distress and patient trauma or death.<sup>8</sup> These pressures in turn affect veterinary team self-esteem, personal beliefs about animal care, dedication to the profession, and client and patient care.<sup>8</sup>

Personal aspects of empathy influence employee professional quality of life in veterinary medicine.<sup>12,26,27</sup> In human medicine, exploring empathetic feelings enhances coping with personal distress, a facet of empathy associated with burnout and compassion fatigue,<sup>23,28</sup> and in veterinary medicine, alleviating personal distress and encouraging empathetic concern enhance compassion satisfaction.<sup>12</sup> In addition, personal distress increases secondary traumatic stress in veterinary students, indicating a need for functional coping strategies.<sup>12</sup>

Further, interactions of veterinary team members creates an organizational culture that in turn affects employee satisfaction, teamwork, and client and patient care.<sup>29</sup> The objective of the study reported here was to examine variables of veterinary team effectiveness and personal empathy for associations with professional quality of life (ie, compassion satisfaction, burnout, and secondary traumatic stress) and job satisfaction in companion animal practice personnel.

## Materials and Methods

The study protocol was approved by the Colorado State University Institutional Review Board (IRB No. 16-6348) and the University of Guelph Research Ethics Board (REB No. 16F043). A collection of established and validated survey tools was used to measure participant-reported job satisfaction and team effectiveness,<sup>24</sup> their professional quality of life,<sup>13</sup> and their cognitive and affective aspects of empathy.<sup>30</sup>

## Respondents

A cross-sectional study was conducted between April 7 and December 20, 2016, and involved a convenience sample of 10 companion animal veterinary clinics from a veterinary practice buying group. Recruited clinics were purposively selected from 2 geographic regions of the United States: 5 veteri-

nary practices from New Jersey, Pennsylvania, and New York and 5 from California and Texas. The veterinary practice buying group identified and invited clinics to participate in the study on the basis of the buying group's interest in providing continuing professional development for clinic personnel or in recognizing practices with high-performance business outcomes. All personnel from each of these 10 clinics were invited to participate in the study by completing online surveys formatted with available software.<sup>4</sup>

## Data collection

Demographic information for each participating practice was collected at the start of the study (April 7 to July 7, 2016) through an online survey that included companion animal practice type (ie, general, feline exclusive, emergency, specialty, general combined with specialty, general combined with emergency, specialty combined with emergency, or general combined with specialty and emergency), veterinary clinic setting (ie, rural, suburban, or urban), employee numbers by gender, price charged for an office visit, and whether the practice provided after-hours emergency care. At the conclusion of the study (December 6 to December 20, 2016), an online exit survey was used to provide information regarding personnel changes and gross annual revenue for the previous calendar year.

Demographic information for veterinary team member respondents was also collected through an online survey and included participant's age, gender, highest level of education achieved (ie, less than a high school diploma, high school diploma or equivalent, college education without earning a degree, associate degree, bachelor degree, graduate degree, or professional degree), job role (ie, practice owner or partner, associate veterinarian, practice manager, registered veterinary technician, veterinary technician, veterinary assistant, client service representative, kennel attendant, or other), years in the current job position, and years in the veterinary profession.

**Team effectiveness**—The TEI, a 41-item questionnaire specifically developed and validated to measure the effectiveness of veterinary teams,<sup>24</sup> was used to assess team effectiveness on the basis of 4 subscales: coordinated team environment (9 items), toxic team environment (12 items), team engagement (11 items), and individual engagement (9 items). A coordinated team environment was one in which teams had structured communication, teamwork, and shared goals and recognized individual contributions, whereas a toxic team environment had communication breakdowns, unconstructive attitudes, conflict, and a lack of teamwork.<sup>24</sup> Team engagement reflected individuals working together as a practice team with perceived feelings of respect and trust among its members, and individual engagement reflected individuals being appreciated and recognized for their work, assigned important and relevant responsibilities within

the practice, and recognized as valuable members of veterinary teams.<sup>24</sup> The response scale was adapted from a 7-point Likert-type scale (ranging from 1 [totally disagree] to 7 [totally agree]) to a visual analog score (ranging from 0 [totally disagree] to 100 [totally agree]) to capture more variability by producing a continuous outcome. A total score for each subscale was computed by production of a sum score of the items within each respective subscale.<sup>24</sup>

**Individual team member empathy**—Cognitive and affective components of empathy were measured with the 28-item Davis IRI, grouped into 4 subscales (perspective taking, fantasy, empathetic concern, and personal distress) with 7 items each.<sup>30</sup> The IRI was developed to measure empathy from a multidimensional approach and has been used in human and veterinary medicine.<sup>16,26–28,30</sup> Cognitive components of empathy were assessed with the IRI's perspective-taking subscale and fantasy subscale, which were designed to measure an individual's ability to understand the feelings of others.<sup>30</sup> The perspective-taking subscale assessed respondents' inclination to take on the point of view of another individual, whereas the fantasy subscale assessed respondents' proclivity to adopt the roles of fictitious characters.<sup>30</sup> The affective components of empathy were assessed with the IRI's empathetic concern subscale and personal distress subscale, which were designed to measure a person's tendency to respond emotionally and express concern for others.<sup>30</sup> The empathetic concern subscale assessed respondents' ability to understand the feelings of or to feel concern for others in challenging circumstances, whereas the personal distress subscale assessed respondents' feelings of personal anxiety when communicating with others in difficult situations.<sup>30</sup> The response scale was adapted from a 5-point Likert-type scale (ranging from 1 [does not describe me well] to 5 [describes me well]) to a visual analog score (ranging from 0 [does not describe me well] to 100 [describes me well]) to capture more variability by creation of a continuous variable. Items were summed within the subscale to compute a total score.

**Professional quality of life**—The ProQOL,<sup>13</sup> a 30-item questionnaire consisting of 3 subscales (compassion satisfaction, burnout, and secondary traumatic stress) with 10 items each, is a commonly used instrument to measure personal positive and negative effects of helping others that have had stressful events<sup>13</sup> and was also used here. The compassion satisfaction subscale assessed the level of pleasure derived from being able to do one's work well, whereas the burnout and secondary traumatic stress subscales assessed compassion fatigue.<sup>13</sup> Burnout referred to feelings of hopelessness and difficulties in dealing with work or in doing one's job effectively, and secondary traumatic stress referred to work-related secondary exposure to extremely stressful or traumatic events.<sup>13</sup> The response scale was adapted from a 5-point Likert-type scale (ranging from 1 [never] to 5 [very often]) to a vi-

sual analog score (ranging from 0 [never] to 100 [very often]) to capture more variability by creation of a continuous variable. Items were summed within the subscale to compute a total score. The burnout subscale contained both positively and negatively worded questions. Prior to summation, positively worded questions were reverse coded so that a higher score reflected an increased level of burnout.

**Job satisfaction**—Job satisfaction was assessed with a visual analog scale (ranging from 0 [extremely dissatisfied] to 100 [extremely satisfied]) for responses to a single question: "On a whole, how satisfied are you with your job?" Such single-item measures of job satisfaction have been validated with various populations<sup>31–33</sup> and successfully used in the veterinary profession.<sup>24</sup>

## Statistical analysis

Statistical analysis was conducted with available software,<sup>b</sup> and internal reliability (Cronbach  $\alpha$ ) for each scale of the survey instruments was also assessed with software.<sup>c</sup> Throughout, values of  $P < 0.05$  were considered significant. Descriptive statistics were computed for independent variables (eg, individual and practice demographics, team effectiveness, and empathy) and dependent variables (eg, compassion satisfaction, burnout, secondary traumatic stress, and job satisfaction). Totals were calculated for categorical variables (eg, job position and gender), and mean  $\pm$  SD and median and range were reported for continuous variables (eg, age, years in the current job position, years in the veterinary profession, and subscale scores for the IRI-, TEI-, and ProQOL-based components). Spearman rank correlation coefficient ( $\rho$ ) analysis was performed between all continuous variables to assess independence of variables.

Four multivariable, mixed linear regression models were constructed, 1 for each of the dependent variables of compassion satisfaction, burnout, secondary traumatic stress, and job satisfaction. Veterinary practice was included as a random effect in all 4 models. Predictor variables examined in each model included demographics (age, gender, years in the veterinary profession, years in the current job position, highest level of education achieved, and employee group), TEI subscales (coordinated team environment, toxic team environment, team engagement, and individual engagement), and IRI subscales (perspective taking, fantasy, empathetic concern, and personal distress). Listwise deletion was used to deal with missing data.

All predictor variables were entered in the model, and manual backward elimination<sup>34</sup> was performed. Next, all significant 2-way interactions that involved the main effects were tested. Nonsignificant interactions were removed sequentially by backward elimination. To perform a final test of significance, all removed main effects were then independently reintroduced into the final model in the order in which they were originally deleted. In addition, to test whether linearity was the only factor hindering retention of a variable, quadratic terms were also independently intro-

duced for continuous variables not retained in the final model. Results were reported as regression coefficient, SE, and 95% CI of the regression coefficient.

Skewness, kurtosis, and visual representation of normality of histograms and normal quantile plots were used to assess overall model fit. Results of the Shapiro-Wilk, Kolmogorov-Smirnov, and Anderson-Darling tests of normality were evaluated. Outliers were assessed with scatterplots of standardized residuals, and models were repeated without the outlier values for comparison.

To assess the impact of missing values, respondent mean score imputation was explored in an attempt to preserve more data within each subscale.<sup>35,36</sup> This method used the mean of a respondent's existing items for a subscale to replace the missing value.<sup>35,36</sup> For this secondary analysis, missing values underwent respondent mean score imputation for respondents with subscales  $\geq 80\%$  complete. A minimum of 50% answered items in a subscale has been required to use respondent mean score imputation<sup>36</sup>; therefore, the 80% completion cutoff was chosen to accommodate the different number of items for each of the instruments used and to avoid overestimation of parameters. For respondents with  $< 80\%$  of a subscale complete, the subscale for that respondent was treated as missing. The final multivariable, mixed linear regression models for each of the 4 models were repeated with respondent mean score imputation, and approximate model fit for each was assessed and compared with corresponding results of the original models that used listwise deletion.

## Results

### Practice-level data

Ten veterinary practices participated, and the practice types were reported as general practice alone ( $n = 6$ ), the combination of general and emergency practice (3), or the combination of general, specialty, and emergency practice (1). One practice was in a rural area, whereas the rest were in suburban ( $n = 6$ ) or urban (3) areas. Mean  $\pm$  SD number of

employees was  $39 \pm 22.09$  (median, 31.5; range, 20 to 93). Mean  $\pm$  SD number of female employees was  $33 \pm 18.9$  (median, 28.5; range, 16 to 80), and mean  $\pm$  SD number of male employees was  $7 \pm 4.4$  (median, 5; range, 3 to 15). The mean price charged for an office visit was  $\$54.00 \pm \$10.60$  (median, \$51.00; range, \$39.00 to \$68.00). Mean  $\pm$  SD gross annual revenue in the previous calendar year was  $\$4,634,960.05 \pm \$2,058,025.20$  (median, \$4,663,328.98; range, \$2,363,329.00 to \$9,000,000.00;  $n = 9$ ).

### Individual-level data

Across the 10 veterinary practices, a total of 342 veterinary team members were reported to have been employed at the start of the study, and 232 (67.8%) team members completed surveys. Mean  $\pm$  SD number of employees per practice at the start of the study was  $34.2 \pm 11.1$  (median, 32; range, 20 to 57), and mean  $\pm$  SD number of employees per practice that participated was  $23.2 \pm 8.8$  (median, 22.5; range, 10 to 37). Mean  $\pm$  SD participation rate per practice was  $71.1 \pm 23.2\%$  (median, 82.5%; range, 31.0% [13/42] to 93.1% [27/29]). Of the 232 respondents, 196 (84.5%) reported that they were female, 33 (14.2%) reported that they were male, and 3 (1.3%) did not specify. Mean  $\pm$  SD age was  $36.1 \pm 11.9$  years (median, 33 years; range, 18 to 73 years;  $n = 230$ ). Mean  $\pm$  SD years in the current job position was  $4.8 \pm 5.1$  (median, 2.4 years; range, 0 to 27 years;  $n = 230$ ), and mean  $\pm$  SD years in the veterinary profession was  $9.2 \pm 8$  years (median, 6.5 years; range, 0 to 36 years; 230). Data pertaining to respondent demographics were also stratified by employee group: veterinary technician (54/232 [23.3%]), client service representative (52 [22.4%]), associate veterinarian (37 [15.9%]), veterinary assistant (20 [8.6%]), other (16 [6.9%]), practice manager (15 [6.5%]), registered veterinary technician (15 [6.5%]), practice owner or partner (12 [5.2%]), or kennel assistant (11 [4.7%]; **Table 1**). The employee group "other" included examination room attendants, accounts managers, marketing staff, human resources assistants, directors of communications, and inventory managers.

**Table 1**—Demographics stratified by employee group for 232 respondents from 10 companion animal veterinary practices in 2 regions of the United States surveyed in 2016 regarding compassion satisfaction, burnout, secondary traumatic stress, and job satisfaction.

Employee group	No. (%) of respondents	Age (y)		Years in the current job position		Years in the veterinary profession		Gender	
		Mean $\pm$ SD	Range	Mean $\pm$ SD	Range	Mean $\pm$ SD	Range	No. (%) of females	No. (%) of males
Practice owner or partner	12 (5.2)	48.7 $\pm$ 7.5	39–63	8.2 $\pm$ 4.6	2.0–14.0	21.5 $\pm$ 6.9	9.0–34.0	4 (33.3)	8 (66.7)
Associate veterinarian	37 (15.9)	36.3 $\pm$ 9.3*	26–61*	5.6 $\pm$ 5.8	0.0–22.0	10.5 $\pm$ 9.6	0.0–36.0	29 (78.4)	8 (21.6)
Practice manager	15 (6.5)	40.1 $\pm$ 10.4	26–58	2.4 $\pm$ 2.8	0.0–11.0	11.9 $\pm$ 6.6	1.0–25.0	13 (86.7)	2 (13.3)
Registered veterinary technician	15 (6.5)	36.9 $\pm$ 11.4	23–56	5.0 $\pm$ 4.2	0.5–17.0	8.6 $\pm$ 5.9	3.0–21.0	13 (86.7)	2 (13.3)
Veterinary technician†	54 (23.3)	34.7 $\pm$ 10.8	19–57	5.0 $\pm$ 5.8	0.0–21.0	9.2 $\pm$ 7.8	0.0–34.0	45 (83.3)	7 (13.0)
Veterinary assistant	20 (8.6)	27.3 $\pm$ 9.3	20–57	3.1 $\pm$ 4.6*	0.3–21.0*	5.0 $\pm$ 4.9	0.3–21.0	19 (95.0)	1 (5.0)
Client service representative	52 (22.4)	36.1 $\pm$ 11.9*	19–67*	3.8 $\pm$ 5.1*	0.0–27.0*	6.4 $\pm$ 7.2*	0.0–30.0*	51 (98.1)	1 (1.9)
Kennel assistant	11 (4.7)	24.5 $\pm$ 9.5	18–51	3.0 $\pm$ 3.7	0.0–11.0	3.8 $\pm$ 4.4*	0.0–11.0*	8 (72.7)	3 (27.3)
Other‡§	16 (6.9)	42.6 $\pm$ 15.7	24–73	4.7 $\pm$ 3.8	0.0–13.0	9.3 $\pm$ 5.1	2.5–17.0	14 (87.5)	1 (6.25)

\*One respondent in this group did not provide a value for the variable. †Two of the 54 respondents in this group did not report gender. ‡One of the 16 respondents in this group did not report gender. §Included examination room attendants, accounts managers, marketing staff, human resources assistants, directors of communications, and inventory managers.



## Survey instrument reliability

Results for the 4 subscales of the TEI indicated high reliability in that the Cronbach  $\alpha$  for the coordinated team environment, toxic team environment, team engagement, and individual engagement subscales was 0.91, 0.89, 0.86, and 0.90, respectively. In addition, the reliability for the perspective taking, fantasy, empathetic concern, and personal distress subscales of the IRI were also acceptable (Cronbach  $\alpha$  values of 0.83, 0.77, 0.70, and 0.72, respectively) as were the reliability results for the compassion satisfaction, burnout, and secondary traumatic stress subscales of the ProQOL (Cronbach  $\alpha$  values of 0.88, 0.76, and 0.75, respectively).

## Assessments of responses

From survey responses received, overall subscale scores for team effectiveness (ie, on the basis of the TEI with subscales for coordinated team environment, toxic team environment, team engagement, and individual engagement), empathy (ie, on the basis of the IRI with subscales for perspective taking, fantasy, empathetic concern, and personal distress), professional quality of life (ie, on the basis of the ProQOL with subscales for compassion satisfaction, burnout, and secondary traumatic stress), and job satisfaction for respondents were calculated (**Table 2**). In addition, because responses for the secondary traumatic stress subscale differed significantly ( $P = 0.002$ ) by

employee group in the multivariable, mixed linear regression models, results for that subscale were also stratified by employee group (**Table 3**).

Spearman rank correlation coefficient ( $\rho$ ) analysis was performed for results of all continuous variables (TEI subscales, IRI subscales, ProQOL subscales, job satisfaction, years in the current job position, years in the veterinary profession, and age; **Table 4**). Responses for the coordinated team environment had strong to moderate positive correlations with responses for team engagement ( $\rho = 0.61$ ), individual engagement ( $\rho = 0.65$ ), compassion satisfaction ( $\rho = 0.42$ ), and job satisfaction ( $\rho = 0.56$ ) and had strong to moderate negative correlations with toxic team environment ( $\rho = -0.71$ ) and burnout ( $\rho = -0.57$ ) that were significant ( $P \leq 0.001$ ). In addition, responses for secondary traumatic stress had significant ( $P \leq 0.001$ ) moderate positive correlations with responses for personal distress ( $\rho = 0.51$ ) and burnout ( $\rho = 0.53$ ). Further, responses for burnout also had significant ( $P \leq 0.001$ ) positive correlations with responses for toxic team environment ( $\rho = 0.59$ ) and personal distress ( $\rho = 0.30$ ).

## Variables associated with compassion satisfaction, burnout, secondary traumatic stress, and job satisfaction

**Compassion satisfaction**—After controlling for the random effect of practice, the final multivariable, mixed linear regression model for compassion satisfaction in-

**Table 2**—Overall results for each subscale in the TEI, IRI, and ProQOL as well as job satisfaction for the 232 respondents in Table 1.

Variables	No. of respondents	Maximum possible score	Mean $\pm$ SD	Median	Range
TEI					
Coordinated team environment	220	900	627.13 $\pm$ 174.34	658.50	100–900
Toxic team environment	178	1,200	588.03 $\pm$ 249.11	602.50	23–1,115
Team engagement	199	1,100	803.09 $\pm$ 164.18	819.00	166–1,095
Individual engagement	204	900	587.50 $\pm$ 197.45	624.00	9–891
IRI					
Perspective taking	186	700	486.84 $\pm$ 117.40	500.00	155–690
Fantasy	158	700	354.02 $\pm$ 139.77	339.50	30–695
Empathetic concern	167	700	497.30 $\pm$ 104.31	510.00	177–700
Personal distress	158	700	184.66 $\pm$ 103.06	177.50	2–614
ProQOL					
Compassion satisfaction	208	1,000	810.26 $\pm$ 150.16	834.00	185–1,000
Burnout	163	1,000	252.60 $\pm$ 146.02	245.00	0–732
Secondary traumatic stress	141	1,000	190.13 $\pm$ 133.42	165.00	0–620
Job satisfaction	219	100	73.95 $\pm$ 21.93	80.00	5–100

**Table 3**—Summary scores for the secondary traumatic stress subscale stratified by employee group for the 141 respondents in Table 2 that provided responses for analysis of this subscale.

Employee group	No. (%) of respondents	Mean $\pm$ SD	Median	Range
Practice owner or partner	9 (6.4)	207.1 $\pm$ 161.7	115	25–549
Associate veterinarian	25 (17.7)	255.4 $\pm$ 146.4	224	25–573
Practice manager	11 (7.8)	197.2 $\pm$ 130.4	175	10–446
Registered veterinary technician	6 (4.3)	272.3 $\pm$ 133.2	291	80–437
Veterinary technician	34 (24.1)	160.3 $\pm$ 148.8	114.5	2–620
Veterinary assistant	14 (9.9)	161.6 $\pm$ 106.8	146	0–418
Client service representative	26 (18.4)	166.0 $\pm$ 112.7	150	0–384
Kennel assistant	7 (5.0)	163.1 $\pm$ 84.3	139	60–302
Other	9 (6.4)	176.3 $\pm$ 84.6	140	81–285

**Table 4—Results of Spearman rank correlation coefficient ( $\rho$ ) analysis of responses for all continuous variables collected from respondents in Tables 1–3.**

Variable	TEI				IRI				ProQOL				Years in current job	Years in veterinary profession	Age	
	Coordinated team	Toxic team environment	Team engagement	Individual engagement	Perspective taking	Fantasy	Empathetic concern	Personal distress	Compassion satisfaction	Burnout	Secondary traumatic stress	Job satisfaction				
TEI																
Coordinated team	1.00															
Toxic team environment	-0.71*	1.00														
Team engagement	0.61*	-0.58*	1.00													
Individual engagement	0.65*	-0.59*	0.61*	1.00												
IRI																
Perspective taking	0.16†	-0.10	0.25*	0.10	1.00											
Fantasy	-0.02	-0.04	0.06	-0.08	0.14	1.00										
Empathetic concern	0.23‡	-0.20†	0.30*	0.07	0.49*	0.34*	1.00									
Personal distress	-0.24‡	0.25‡	-0.23‡	-0.30*	-0.25‡	0.27*	-0.17†	1.00								
ProQOL																
Compassion satisfaction	0.42*	-0.33*	0.51*	0.45*	0.31*	0.04	0.38*	-0.29*	1.00							
Burnout	-0.57*	0.59*	-0.55*	-0.55*	-0.22‡	0.00	-0.25‡	0.30*	-0.69*	1.00						
Secondary traumatic stress	-0.31*	0.37*	-0.21†	-0.38*	-0.10	0.16	-0.01	0.51*	-0.33*	0.53*	1.00					
Job satisfaction	0.56*	-0.57*	0.50*	0.62*	0.18†	-0.05	0.16†	-0.25‡	0.63*	-0.69*	-0.36*	1.00				
Demographics																
Years in the current job	-0.01	0.01	0.06	0.10	-0.06	-0.11	-0.07	-0.04	0.04	0.10	0.07	0.00	1.00			
Years in the veterinary profession	0.05	-0.07	0.10	0.22‡	0.07	-0.07	-0.07	-0.04	0.02	0.10	0.08	0.06	0.69*	1.00		
Age	0.13†	-0.10	0.15†	0.22‡	0.10	-0.24	-0.01	-0.07	0.09	-0.07	-0.02	0.21‡	0.51*	0.60*	1.00	

\* $P \leq 0.001$ . † $P \leq 0.05$ . ‡ $P \leq 0.01$ .

**Table 5—Results of multivariable, mixed linear regression models to identify variables associated with compassion satisfaction, burnout, secondary traumatic stress, and job satisfaction as reported by respondents in Tables 1–3.**

Variable	Compassion satisfaction (n = 144)		Burnout (n = 135)		Secondary traumatic stress (n = 134)		Job satisfaction (n = 168)	
	Coefficient (95% CI)	SE	Coefficient (95% CI)	SE	Coefficient (95% CI)	SE	Coefficient (95% CI)	SE
Intercept	-67.68 (-562.35 to 426.98)	218.67	344.71 (133.74 to 555.68)*	93.26	158.35 (15.27 to 301.43)†	63.25	50.41 (32.58 to 68.24)‡	7.88
Team engagement	0.76 (0.25 to 1.26)*	0.26	—	—	—	—	—	—
Individual engagement	0.07 (-0.13 to 0.26)	0.10	0.04 (-0.14 to 0.22)	0.09	-0.27 (-0.37 to 0.17)‡	0.05	0.05 (0.03 to 0.06)‡	0.01
Toxic team environment	—	—	0.25 (0.16 to 0.33)‡	0.04	—	—	-0.02 (-0.04 to -0.01)‡	0.01
Perspective taking	—	—	-0.51 (-0.78 to -0.24)‡	0.14	—	—	—	—
Empathetic concern	1.31 (0.55 to 2.08)‡	0.39	—	—	0.26 (0.07 to 0.44)*	0.09	—	—
Personal distress	-0.73 (-1.25 to 0.22)*	0.26	0.23 (-0.47 to 0.93)	0.36	0.57 (0.38 to 0.77)‡	0.10	—	—
Age	—	—	-2.42 (-4.32 to -0.52)†	0.96	—	—	0.22 (0.01 to 0.43)†	0.11
Employee group								
Associate veterinarian	—	—	—	—	Referent	—	—	—
Practice owner or partner	—	—	—	—	-77.66 (-157.29 to 1.96)	40.19	—	—
Practice manager	—	—	—	—	-60.20 (-131.64 to 11.24)	36.05	—	—
Registered veterinary technician	—	—	—	—	-30.08 (-126.82 to 66.65)	48.82	—	—
Veterinary technician	—	—	—	—	-124.18 (-181.45 to -66.90)‡	28.91	—	—
Veterinary assistant	—	—	—	—	-75.24 (-147.12 to -3.36)†	36.28	—	—
Client service representative	—	—	—	—	-118.61 (-176.47 to -60.75)‡	29.20	—	—
Kennel attendant	—	—	—	—	-112.15 (-213.32 to -10.98)†	51.06	—	—
Other	—	—	—	—	-31.56 (-109.07 to 45.95)	39.12	—	—
Years in the veterinary profession	-3.59 (-6.56 to -0.61)†	1.50	5.38 (2.62 to 8.14)‡	1.39	3.81 (1.38 to 6.24)*	1.23	—	—
Years in the current job position	5.77 (1.46 to 10.08)*	2.18	—	—	—	—	—	—
Interaction terms								
Team engagement X empathetic concern	-0.001 (-0.002 to 0.000)†	0.000	—	—	—	—	—	—
Individual engagement X personal distress	0.001 (0.000 to 0.002)†	0.000	-0.001 (-0.002 to -0.001)‡	0.000	—	—	—	—
Perspective taking X personal distress	—	—	0.001 (0.000 to 0.003)†	0.001	—	—	—	—

\* $P \leq 0.01$ . † $P \leq 0.05$ . ‡ $P \leq 0.001$ .

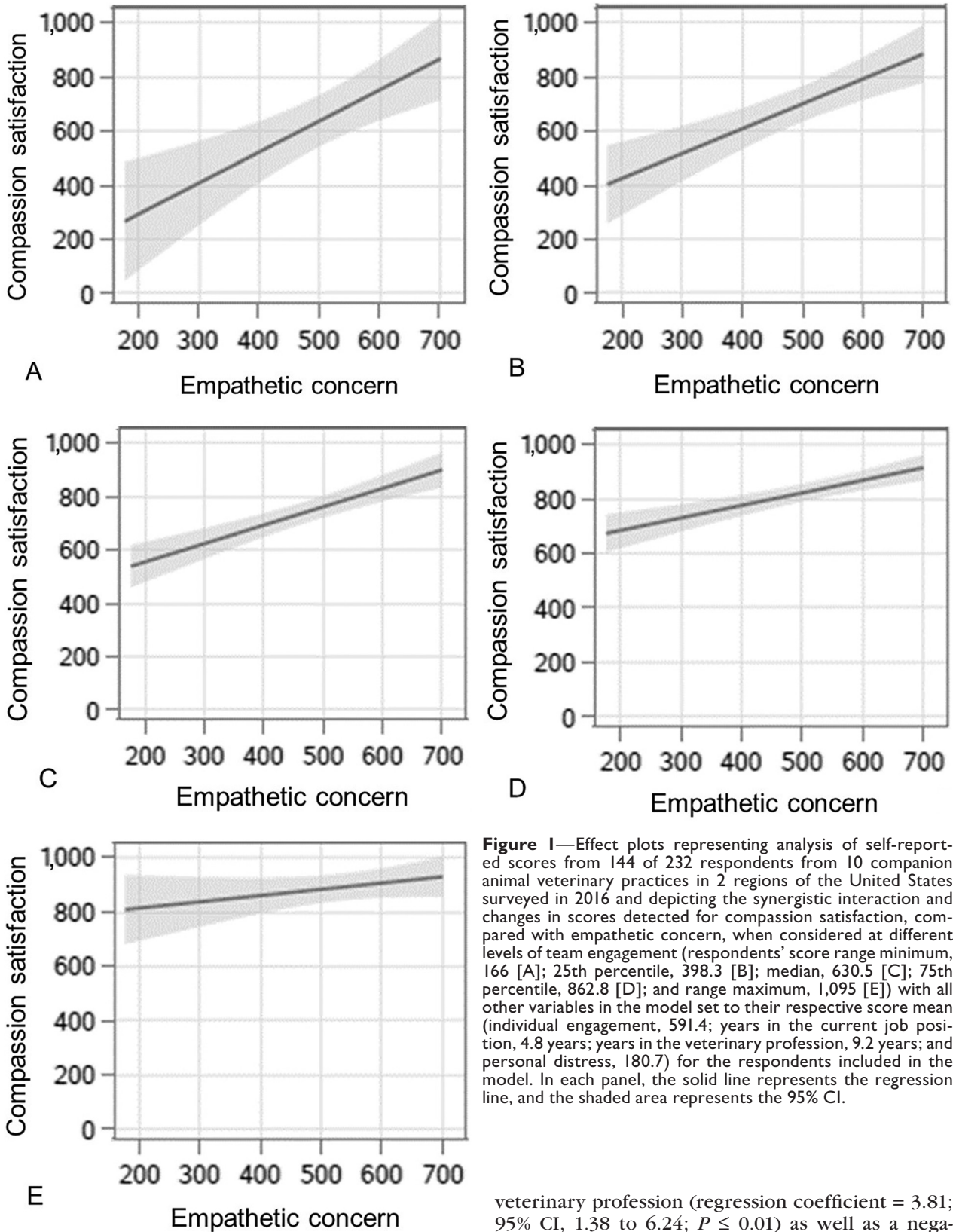
— = The variable did not have significance in an earlier analysis for inclusion in the model.

cluded a positive association with years in the current job position (regression coefficient = 5.78; 95% CI, 1.46 to 10.08;  $P \leq 0.01$ ) and a negative association with years in the veterinary profession (regression coefficient = -3.60; 95% CI, -6.56 to 0.61;  $P \leq 0.05$ ; **Table 5**). This analysis also identified 2 interactions in that, for compassion satisfaction, empathetic concern was moderated by team engagement (regression coefficient = -0.001; 95% CI, -0.002 to 0.000;  $P \leq 0.05$ ; **Figure 1**) and individual engagement was moderated by personal distress (regression coefficient = 0.001; 95% CI, 0.000 to 0.002;  $P \leq 0.05$ ; **Figure 2**).

**Burnout**—After controlling for the random effect of practice, the final model for burnout included positive associations with toxic team environment (regression

coefficient = 0.25; 95% CI, 0.16 to 0.33;  $P \leq 0.001$ ) and years in the veterinary profession (regression coefficient = 5.38; 95% CI, 2.62 to 8.14;  $P \leq 0.001$ ) but a negative association with age (regression coefficient = -2.42; 95% CI, -4.32 to -0.52;  $P \leq 0.05$ ; **Table 5**). This model also identified 2 interactions in that, for burnout, individual engagement was moderated by personal distress (regression coefficient = -0.001; 95% CI, -0.002 to -0.001;  $P \leq 0.001$ ; **Figure 3**) and perspective taking was also moderated by personal distress (regression coefficient = 0.001; 95% CI, 0.000 to 0.003;  $P \leq 0.05$ ; **Figure 4**).

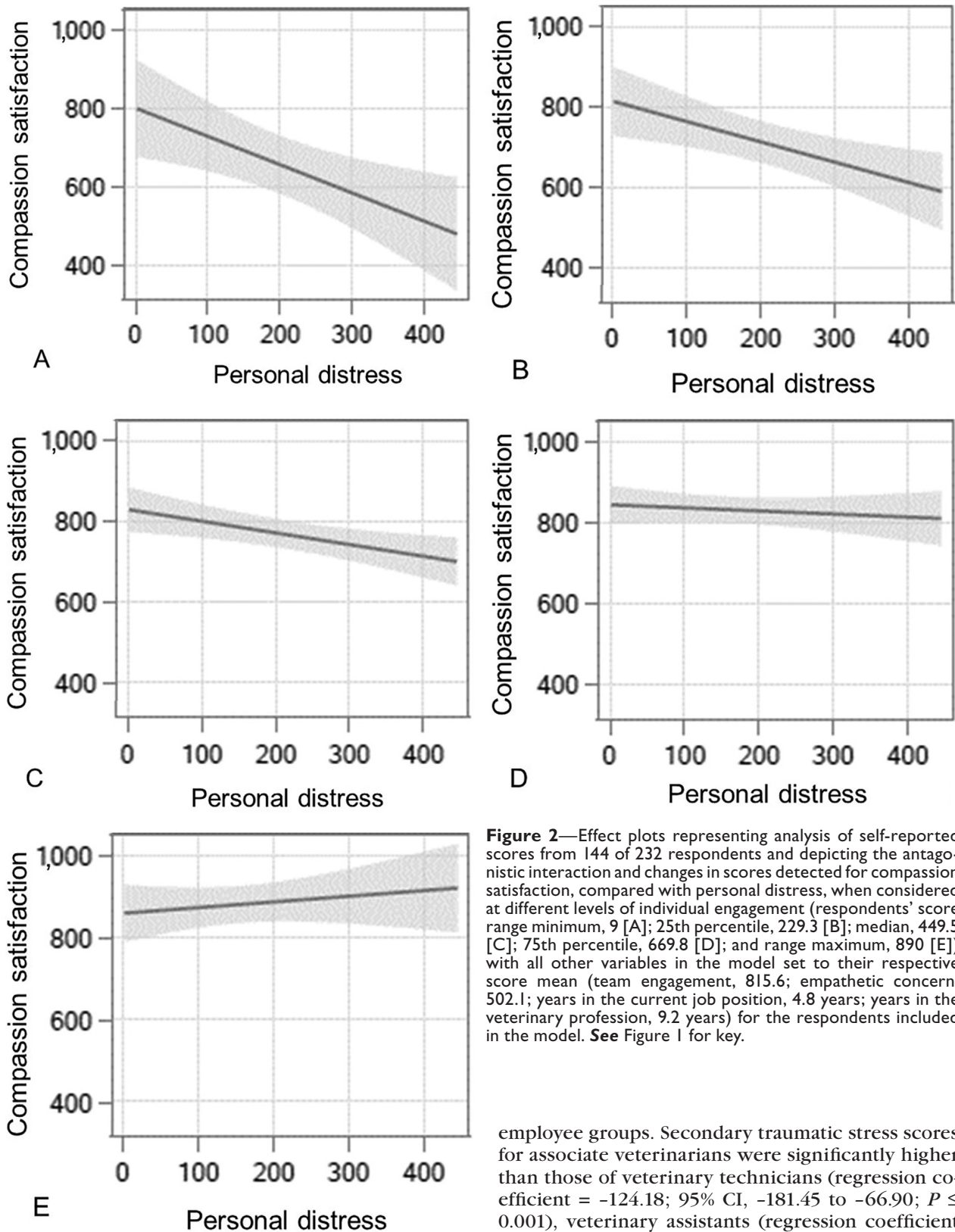
**Secondary traumatic stress**—After controlling for the random effect of practice, the final model for secondary traumatic stress included positive asso-



**Figure 1**—Effect plots representing analysis of self-reported scores from 144 of 232 respondents from 10 companion animal veterinary practices in 2 regions of the United States surveyed in 2016 and depicting the synergistic interaction and changes in scores detected for compassion satisfaction, compared with empathetic concern, when considered at different levels of team engagement (respondents' score range minimum, 166 [A]; 25th percentile, 398.3 [B]; median, 630.5 [C]; 75th percentile, 862.8 [D]; and range maximum, 1,095 [E]) with all other variables in the model set to their respective score mean (individual engagement, 591.4; years in the current job position, 4.8 years; years in the veterinary profession, 9.2 years; and personal distress, 180.7) for the respondents included in the model. In each panel, the solid line represents the regression line, and the shaded area represents the 95% CI.

ciations with empathetic concern (regression coefficient = 0.26; 95% CI, 0.07 to 0.44;  $P \leq 0.01$ ), personal distress (regression coefficient = 0.57; 95% CI, 0.38 to 0.77;  $P \leq 0.001$ ), and number of years in the

veterinary profession (regression coefficient = 3.81; 95% CI, 1.38 to 6.24;  $P \leq 0.01$ ) as well as a negative association with individual engagement (regression coefficient = -0.27; 95% CI, -0.37 to -0.17;  $P \leq 0.001$ ; Table 5). In addition, job position had a significant ( $P = 0.002$ ) association with reported scores of secondary traumatic stress. Associate veterinar-

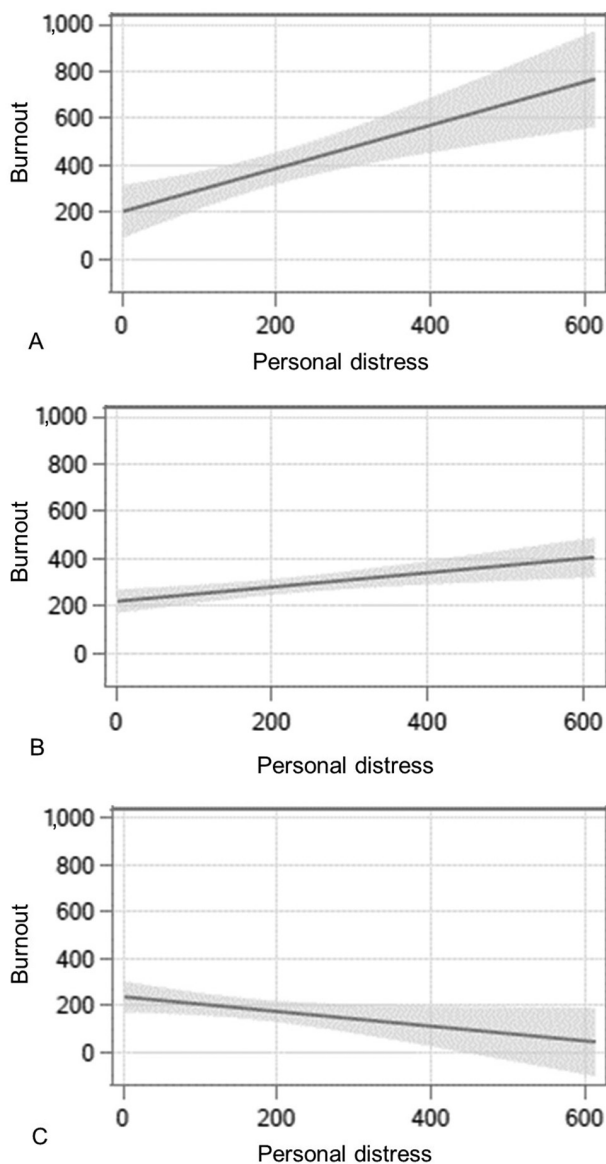


**Figure 2**—Effect plots representing analysis of self-reported scores from 144 of 232 respondents and depicting the antagonistic interaction and changes in scores detected for compassion satisfaction, compared with personal distress, when considered at different levels of individual engagement (respondents' score range minimum, 9 [A]; 25th percentile, 229.3 [B]; median, 449.5 [C]; 75th percentile, 669.8 [D]; and range maximum, 890 [E]) with all other variables in the model set to their respective score mean (team engagement, 815.6; empathetic concern, 502.1; years in the current job position, 4.8 years; years in the veterinary profession, 9.2 years) for the respondents included in the model. **See** Figure 1 for key.

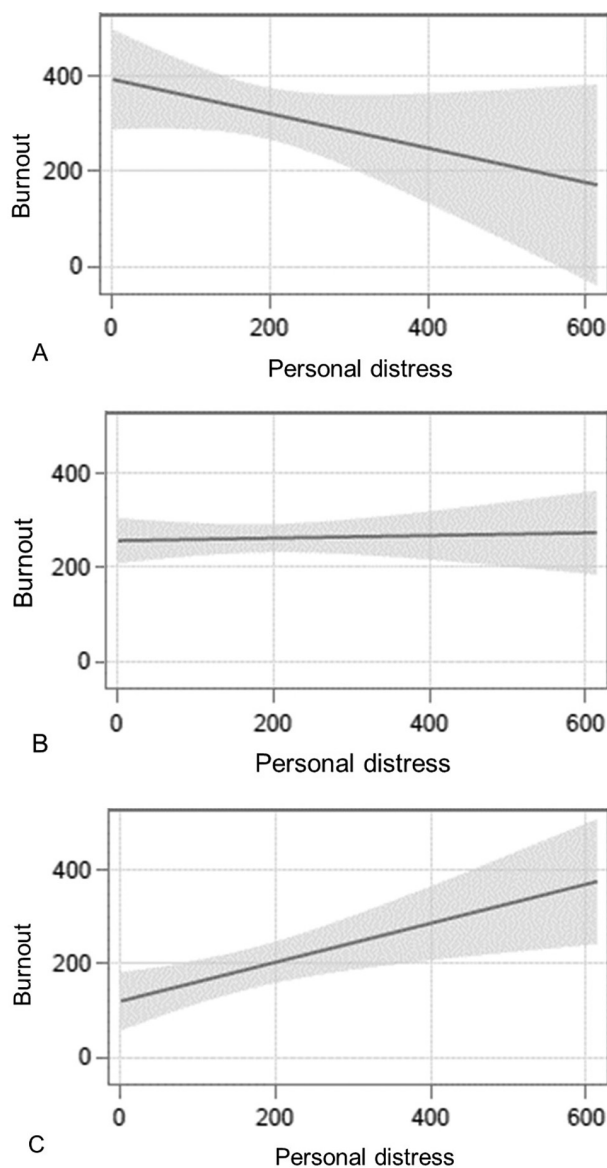
ians, the referent category for the employee group variable, reported higher scores for secondary traumatic stress (mean  $\pm$  SD, 255.4  $\pm$  146.4; median, 224; range 25 to 573;  $n = 25$ ) than did any of the other

employee groups. Secondary traumatic stress scores for associate veterinarians were significantly higher than those of veterinary technicians (regression coefficient = -124.18; 95% CI, -181.45 to -66.90;  $P \leq 0.001$ ), veterinary assistants (regression coefficient = -75.24; 95% CI, -147.12 to -3.36;  $P \leq 0.05$ ), client service representatives (regression coefficient = -118.61; 95% CI, -176.47 to -60.75;  $P \leq 0.001$ ), and kennel attendants (regression coefficient = -112.15; 95% CI, -213.32 to -10.98;  $P \leq 0.05$ ).





**Figure 3**—Effect plots representing analysis of self-reported scores from 135 of 232 respondents and depicting the antagonistic interaction and changes in scores detected for burnout, compared with personal distress, when considered at different levels of individual engagement (respondents’ score range minimum, 9 [A]; median, 449.5 [B]; and range maximum, 890 [C]) with all other variables in the model set to their respective score mean (toxic team environment, 573.3; perspective taking, 484.6; years in the veterinary profession, 9.2 years; and age, 36.1 years) for the respondents included in the model. See Figure 1 for key.



**Figure 4**—Effect plots representing analysis of self-reported scores from 135 of 232 respondents and depicting the antagonistic interaction and changes in scores detected for burnout, compared with personal distress, when considered at different levels of perspective taking (respondents’ score range minimum, 155 [A]; median, 422.5 [B]; and range maximum, 690 [C]) with all other variables in the model set to their respective score mean (individual engagement, 581.6; toxic team environment, 573.3; years in the veterinary profession, 9.2 years; and age, 36.1 years) for the respondents included in the model. See Figure 1 for key.

**Job satisfaction**—After controlling for the random effect of practice, the final model for job satisfaction included positive associations with individual engagement (regression coefficient = 0.05; 95% CI, 0.03 to 0.06;  $P \leq 0.001$ ) and age (regression coefficient = 0.22; 95% CI, 0.01 to 0.44;  $P \leq 0.05$ ) but a negative association with toxic team environment (regression coefficient = -0.02; 95% CI, -0.04 to -0.01;  $P \leq 0.001$ ; Table 5).

**Listwise deletion versus respondent mean score imputation**

When the models were fit with the data set containing mean imputation, no meaningful differences were detected in the variable contributions results, compared with results from the 4 models that used listwise deletion. In addition, because there were no overall differences in skewness, kurtosis, or nor-

mality detected with the Shapiro-Wilk, Kolmogorov-Smirnov, and Anderson-Darling tests, results obtained from the original data set with listwise deletion were reported.

## Discussion

Results of the present study indicated that elements of team effectiveness, personal empathy, age, years in the current job position, and years in the veterinary profession were associated with elements of professional quality of life and job satisfaction in veterinary medicine. These findings highlighted that the overall health and well-being of respondents were likely multimodal. These findings supported the opinion that individual, team, and work environment factors play roles in compassion satisfaction and compassion fatigue, which is composed of burnout and secondary traumatic stress.<sup>13</sup> Understanding factors with positive and negative influence on professional quality of life and job satisfaction in veterinary medicine provides opportunities to inform development of strategies to improve outcomes for veterinary team members. Improving these outcomes helps build strong veterinary teams and ultimately improves patient care<sup>8</sup> and client service.<sup>27</sup> In addition, it improves employees' job satisfaction<sup>37</sup> and overall practice performance.<sup>24,38</sup>

Results of multivariable, mixed linear regression in the present study indicated that self-reported levels of compassion satisfaction were markedly higher for respondents who had been in their current position longer, compared with those who had been in the veterinary profession longer. A possible explanation was the healthy worker effect,<sup>39-41</sup> whereby individuals who derive positive outcomes from their work tend to stay in their positions, and individuals who experience negative outcomes tend to leave their positions. Thus, individuals with low compassion satisfaction who had worked at the participating veterinary clinics could have left their positions before onset of the present study, precluding our capture of their data. Relatedly, a previous study<sup>42</sup> shows that veterinarians who held a job position for a long time reported increased feelings of personal accomplishment that countered feelings of emotional exhaustion.

Years in the veterinary profession, however, was associated with a lower regression coefficient for compassion satisfaction in the present study. This finding shed light on a concerning situation in which personnel in veterinary practices may take less pleasure in their work over time, yet because of dedication to clients and patients, they may stay in unfavorable work environments.<sup>8</sup> Given that these findings may have potential implications on the health and well-being of personnel in the veterinary profession, this is an important area for future research. Regardless, identifying strategies (eg, recognizing accomplishments, identifying sources of motivation and frustration, and conducting performance evaluations<sup>43-45</sup>) to support veterinary employees and help ensure they take plea-

sure in their work may help enhance compassion satisfaction and reduce staff turnover.

Findings from multivariable, mixed linear regression in the present study indicated that respondents' reported compassion satisfaction was also impacted by a synergistic interaction between reported levels of team engagement and empathetic concern. With low team engagement, compassion satisfaction increased as empathetic concern increased; however, with high team engagement, compassion satisfaction remained relatively high, regardless of the level of empathetic concern. These findings suggested that prioritizing high levels of team engagement could contribute to compassion satisfaction, regardless of an individual's level of empathetic concern. Although team engagement in the present study was measured at the individual level (ie, each respondent's perception of team engagement), it is a practice-level attribute that can be influenced by practice management. Developing team-level strategies (eg, team-building activities, regular team meetings, and team recognition) promotes a practice culture that supports team engagement and may create an environment in which all team members could take pleasure in helping clients and their animals.

Further, respondents' reported compassion satisfaction was impacted by an antagonistic interaction between reported levels of individual engagement and personal distress in that as individual engagement increased, the degree of negative association between personal distress and compassion satisfaction lessened. At high levels of individual engagement, compassion satisfaction increased as personal distress increased in the present study, suggesting that individual engagement had a protective effect against the potential negative effects of personal distress on compassion satisfaction for respondents. Similarly, in human medicine, nurses who feel empowered at work, which includes having opportunities to take on new responsibilities and having support from colleagues, reported more positive attitudes in the workplace.<sup>46</sup> Developing processes to ensure staff members have opportunities to be heard, be recognized for their contributions, and develop in their roles is likely to have a protective effect against personal distress and to contribute to veterinary employees' compassion satisfaction.

Although the range of burnout scores reported by respondents was wide in the present study, the mean and median burnout scores were toward the lower end of the scale, which was similar to studies<sup>21,22</sup> that included burnout in physicians, nurses, and certified nurse assistants. In addition, the positive association between toxic team environments and burnout in the present study suggested that identifying processes to create cultures of respect, effective team communication,<sup>44</sup> and timely feedback<sup>45</sup> would likely reduce individuals' experience of burnout.

Results also indicated that respondents' reported burnout was impacted by an antagonistic interaction between their reported individual engagement and

personal distress in that at low levels of individual engagement, burnout increased with increasing personal distress; however, at high levels of individual engagement, burnout was less impacted by increasing levels of personal distress. Thus, high levels of individual engagement appeared to have been protective against respondent burnout in the present study. These findings were consistent with reports<sup>21,46,47</sup> of nurses who feel empowered and respected by team members and relay overall lower levels of burnout.<sup>48</sup> Developing processes to help ensure team members feel engaged, valued, and recognized is likely important to a number of individual outcomes, including mitigating burnout, for employees in the veterinary profession.

In addition, results of the present study indicated that scores for burnout were also affected by an antagonistic interaction between respondents' reported levels of personal distress and perspective taking. For respondents who reported low levels of perspective taking, burnout decreased as personal distress increased; however, for respondents who reported high levels of perspective taking, burnout increased as personal distress increased. Perspective taking is a key foundation in building relationships with colleagues and clients.<sup>26,30</sup> It was possible that respondents with high levels of perspective taking were more likely to have taken on and been impacted by stress responses of others, further potentiating their own burnout. Similarly, the idea that perspective taking is associated with burnout has been identified in nurses from Spain and the United States.<sup>18</sup> In addition, a study<sup>16</sup> in human medicine suggests that regulating aspects of empathy may maintain balance and that a certain level of empathetic feeling is required to encourage an individual to help another in distress, which can lead to satisfaction in one's job, but may be limited by the level of personal distress. If burnout from personal distress is influenced by perspective taking, as suggested by the findings of the present study, recognizing that individuals carry feelings from clients or team members, in addition to their own personal feelings, may help identify individuals with a greater need for coping strategies (eg, team meetings, communication rounds, and opportunities for debriefing difficult interactions).

The finding in the present study that respondents' reported scores for burnout were negatively associated with respondent age was consistent with a study<sup>49</sup> that suggests older veterinarians may develop coping or defense mechanisms. In addition, the stigma associated with mental health may inhibit older personnel from reporting feelings of stress and burnout.<sup>1</sup> Further, older personnel who had worked at participating veterinary clinics and experienced burnout could have left their positions before the onset of the present study. In contrast, it was unclear why reported levels of burnout increased with years in the veterinary profession, and this finding warrants further research. Perhaps when controlling for age, research may show that burnout increases with

years in the veterinary profession until individuals develop their own form of coping mechanisms or leave the profession.

Respondents' reported levels of secondary traumatic stress were relatively low in the present study, and this finding was consistent with findings related to secondary traumatic stress in human medicine.<sup>21,22</sup> Overall, the low secondary traumatic stress in human and veterinary medicine may indicate that individuals in these professions understand they are caring for patients (human or animal) with traumatic or stressful events, and the negative impacts may be less to those in these professions than to those in the general population. In addition, secondary traumatic stress varies depending on job position and setting. For instance, nurses in a pediatric medical unit reported the greatest secondary traumatic stress, compared with that of individuals working in critical care, hematologic, oncologic, or surgical units.<sup>21</sup> In the present study, associate veterinarians reported greater secondary traumatic stress than did other respondent employee groups. Related, associate veterinarians report more serious psychological distress than practice owners, but less than other support staff.<sup>1</sup> Research also shows that individuals with different job positions in a veterinary practice are exposed to, affected by, and respond to situations in different ways that may ultimately affect their well-being.<sup>24</sup> Because much of the literature focuses on veterinarians, there is a need for mental health professionals, veterinary practices, and researchers to examine impacts of experiences for all employee groups in veterinary practices. In addition, it would be useful in veterinary medicine to have training strategies to help individuals deal with and process traumatic or emergency cases. Doing so could benefit workers' mental well-being and better position them to support clients and patients during traumatic or stressful events.

Findings in the present study suggested that secondary traumatic stress decreased as individual engagement increased. Relatedly, a study<sup>27</sup> suggests that individuals in veterinary medicine who feel more engaged are likely to feel more supported by their team.<sup>27</sup> Therefore, promoting work environments in which veterinary practice personnel feel engaged is important to support staff function and may be helpful when dealing with difficult or potentially traumatizing scenarios at work.

Secondary traumatic stress scores reported by respondents in the present study increased with increasing personal distress, and this finding was expected, given that personal distress is anxiety in response to tense interpersonal situations.<sup>30</sup> When experiencing high personal distress, individuals may not be emotionally, mentally, or behaviorally equipped to care for a patient or client going through a traumatic event.

Although cognitive empathy (ie, mentally understanding the feelings of others), affective empathy (ie, emotionally sensing the feeling of others), and behavioral empathy (ie, sharing understanding with

someone through verbal and nonverbal behaviors) are recognized,<sup>30,50</sup> only the cognitive and affective aspects of empathy were measured in the present study, and findings indicated that secondary traumatic stress increased with increasing empathetic concern. Literature suggests that empathetic concern, along with perspective taking, is the foundation for creating relationships with and caring for team members as well as clients,<sup>26,27</sup> and it was possible that some respondents in the present study were unable to regulate their empathetic feelings through adaptive coping strategies, resulting in greater reports of secondary traumatic stress. Therefore, assisting staff in developing communication and coping strategies to support clients, without having to experience clients' distress directly, is likely to help alleviate some secondary traumatic stress. Healthful approaches to empathy, such as normalization, legitimization, and validation, could help individuals acknowledge what clients or colleagues are facing, without feeling responsible to fix the situation.<sup>51</sup>

Results of the present study also indicated that secondary traumatic stress increased with increasing years in the veterinary profession. As individuals work longer in the veterinary profession, they are exposed to more scenarios that could cause accumulation of secondary traumatic stress. On the other hand, secondary traumatic stress is positively correlated with self-stigma in veterinary students,<sup>52</sup> and it was possible that respondents in the present study with less clinical experience, similar to veterinary students, may have been embarrassed to admit feeling distressed in traumatic scenarios. Such self-stigma could be alleviated by a supportive and judgement-free practice environment that encourages employees to have open discussions about trauma and personal well-being.<sup>12</sup> Developing practice strategies or protocols that involve open discussions among all practice team members is likely to aid in debriefing after difficult or traumatic clinical situations, thus maintaining the health of a veterinary practice and its employees.

The term job satisfaction can be used in any profession, whereas the term compassion satisfaction is specifically designated for professions that provide care for others who experience trauma.<sup>13</sup> This difference was reflected in the regression models of the present study in that components of empathy were identified as key variables for the compassion satisfaction model, but not the job satisfaction model. In the present study, individual engagement correlated positively with job satisfaction, a finding similar to that in a study<sup>24</sup> of Canadian veterinary teams. In addition, results of the present study suggested that individual engagement played a protective role against burnout and secondary traumatic stress and contributed positively to compassion satisfaction. Similarly, individuals engaged in a team are more likely to feel supported by their team, allowing them to cope with stressors and feel better in their job.<sup>27</sup> As such, it is critical that veterinary practices develop processes to

elicit feedback and promote individual engagement so that quality of life and job satisfaction are supported, and in turn, health and wellness of the veterinary practice would also be supported.

Respondents' reported perceptions of working in a toxic team environment correlated negatively with job satisfaction in the present study, and this was consistent with previous research in veterinary medicine.<sup>24</sup> Because findings indicated that toxic team environment potentiated burnout and reduced job satisfaction in the present study, it is important for practice leadership to regularly evaluate the culture of the practice to set policies, empower individuals, and create work environments in which concerns can be discussed openly.<sup>53</sup> In addition, owing to the often fast pace of veterinary medicine and the interdependence of job roles, conflicts within teams may occur frequently. Therefore, a lack of leadership could cause frustration and decreased morale for the entire team.<sup>25</sup> It is important that veterinary practice leaders create a work culture in which staff members are empowered and accountable to proactively manage potential and actual intrateam conflicts to minimize development of a toxic team environment and enhance job satisfaction.<sup>54</sup>

Several variables were identified multiple times as predictors of professional quality of life and job satisfaction in the present study; therefore, investigations for development of interventions to address these may have broad impacts on the overall culture of veterinary practice. For instance, individual engagement qualified for inclusion in all 4 regression models (compassion satisfaction, burnout, secondary traumatic stress, and job satisfaction), and individual engagement entails helping individuals feel valued as a team member through recognition, opportunities, awards, expressions of gratitude, and provision of compliments. Personal distress was included in 3 of the regression models (compassion satisfaction, burnout, and secondary traumatic stress), and mitigation of personal distress requires equipping veterinary teams with skills to provide emotional support to colleagues and clients in difficult situations. Empathetic concern was in 2 of the models (compassion satisfaction and secondary traumatic stress) and involves equipping veterinary team members with tools for behavioral empathy through verbal and nonverbal expression of empathy. Lastly, toxic team environment was in 2 models (burnout and job satisfaction), and mitigation of toxic team environments demands addressing individual toxic attitudes and intrateam conflicts in a timely manner. Training and orientation for team members,<sup>55</sup> regular team meetings,<sup>44</sup> and performance evaluations<sup>45</sup> or other feedback<sup>56</sup> enhance individual engagement and help address toxic attitudes early. In addition, communication training for all team members may help promote empathetic concern and alleviate personal distress that could occur when they are caring for patients and clients. The end result optimizes morale, individual performance and well-being,



teamwork, and team satisfaction, thus contributing to enhanced staff retention, client service, patient care, and practice performance.

In the present study, a selection bias could have been introduced by the convenience sampling method used to identify and invite participation. The 10 veterinary practices employing the respondents may not have been representative of all companion animal veterinary practices and their teams. However, efforts were taken to recruit veterinary practices from different regions of the United States to minimize the potential influence of geographic differences. In addition, a healthy worker bias may have been present and could have skewed the outcomes in a positive direction. Because most (85%) respondents were female, our ability to detect a gender difference in the models examined may have been limited. Further, response rates varied greatly among practices, which suggested that practices with high response rates could have had stronger leadership and better communication and teamwork strategies. In addition, these practices could have been overrepresented in the present study. Importantly, respondents were solely from companion animal practices in 1 country; therefore, caution should be used when extrapolating results of the present study to other countries or veterinary practice types.

The present study was cross-sectional, which by nature prevented examination of temporal relationships and limited our understanding of changes in professional quality of life and job satisfaction among respondents over time. A longitudinal study of professional quality of life and job satisfaction among veterinary teams would be useful to identify causal relationships<sup>24</sup> or factors associated with development of coping mechanisms and resiliency among veterinary staff. In addition, adapting the original Likert-type scales of the original assessment instruments to a visual analog scale used in the present study prevented comparing scores obtained in the present study with those of studies that used the Likert-type scales. Nonetheless, the survey instruments used in the present study had strong reliability, and they captured more detailed variability in responses than would have been expected if the original scales had been used. In addition, the use of self-reported measures introduced the risk of social desirability bias, in which positive responses are more likely to shed a complimentary light on the respondent. Lastly, the present study did not explore all variables that likely influenced constructs of team effectiveness, empathy, professional quality of life, and job satisfaction.

Moving forward, it is important to recognize that professional quality of life and job satisfaction in veterinary medicine are likely multidimensional, including individual, team, and work environment factors. Considering the broad range of factors that may contribute to or influence employees' professional quality of life in veterinary practice, continued research could provide information to help

develop more holistic strategies for coping and resiliency that may benefit all employee groups in veterinary practices. To enhance outcomes for patients, clients, and the veterinary profession, development and implementation of processes to assess and promote individual and team engagement and reduce toxic team environments should be priorities for all veterinary practices.

## Acknowledgments

Zoetis (US) and Veterinary Growth Partners provided funding and identified the veterinary practices invited to participate in the present study.

The authors declare that there were no conflicts of interest.

## Footnotes

- a. Qualtrics Survey Software, version April 2016, Qualtrics, Provo, Utah.
- b. SAS Studio, version 3.6 Basic Edition, SAS Institute Inc, Cary, NC.
- c. IBM SPSS Statistics for Windows, version 24.0, IBM Corp, Armonk, NY.

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