Development and validation of a Burden Transfer Inventory for predicting veterinarian stress related to client behavior

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OBJECTIVE

To develop and validate a Burden Transfer Inventory (BTI) of stressful client behaviors and to evaluate whether those behaviors are associated with client caregiver burden and contribute to veterinarian stress and burnout.

DESIGN

3-stage cross-sectional psychometric validation study.

SAMPLE

1,151 small animal veterinarians and 372 dog and cat owners.

PROCEDURES

During stage 1, a pool of 34 items representing stressful client behaviors was created through open-ended surveys of practicing veterinarians and 3 phases of pilot testing. During stage 2, 1,151 veterinarians recruited through the Veterinary Information Network completed a survey including those behavior items and validated measures of stress and burnout. Completed surveys were randomly assigned to either a measure development or validation database for factor and item analyses. Data were then combined to determine whether the BTI was correlated with measures of stress and burnout. During stage 3, owners of dogs and cats with a serious illness completed an online survey to assess how frequently they engaged in each BTI item as well as a validated measure of caregiver burden.

RESULTS

For dog and cat owners, there was a significant positive correlation between caregiver burden and the frequency that those owners reported engaging in BTI items. The frequency that veterinarians reported encountering BTI items was positively correlated with measures of stress and burnout, which suggested burden transfer from owners to veterinarians. The extent to which veterinarians reported being bothered by BTI items was a more robust predictor of stress and burnout than the frequency with which those items occurred.

CONCLUSIONS AND CLINICAL RELEVANCE

Results indicated the BTI can be used to understand how client behaviors associated with caregiver burden affect veterinarian stress and burnout. The BTI may be useful to identify specific stressors affecting individual veterinarians and how they react to those stressors. (*J Am Vet Med Assoc* 2019;254:133–144)

Research into the psychological well-being of veterinarians suggests that they are exposed to several psychologically related occupational hazards such as moral stress, compassion fatigue, and workplace bullying.[1–8] Researchers have also assessed the effect of various client factors on veterinarian stress. Veterinarians report that client factors, such as economic limitations, unrealistic expectations, and lack of compliance, contribute to workplace stress.[9,10] Client complaints and high workload are ranked among the greatest occupational stressors for veterinarians.[11] Collectively, those findings suggest that interactions with clients play an important role in stress and burnout for veterinarians. Researchers[12] have previously suggested that client interactions within specific contexts, particularly interactions with distressed clients who are experiencing caregiver burden, might be especially difficult for veterinarians. Caregiver burden is defined as a reaction of strain caused by providing care for a loved one with an illness[13] and has been associated with clinical signs of depression and a reduced quality of life in studies involving companion animal owners[12] and small animal veterinary clinic clients.[14] Although it is important for veterinarians to be cognizant of caregiver burden as it relates to cli-

ABBREVIATIONS

BTI	Burden Transfer Inventory
CBI	Copenhagen Burnout Inventory
PSS	Perceived Stress Scale
VIN	Veterinary Information Network
ZBI	Zarit Burden Interview

ents and the well-being of their patients, the behavior of clients experiencing caregiver burden might, in turn, affect veterinarian well-being.

In the human medical literature, anxiety and distress are positively correlated with health-care utilization,[15,16] which suggests that anxious and distressed patients overuse medical care. In the context of veterinary medicine, increasing caregiver burden is associated with an increase in the use of veterinary services, particularly nonbillable communications.[14] Although overuse of veterinary services by distressed clients might increase veterinarian workload, there may be additional mechanisms by which client distress can be transferred to veterinarians. For example, depression is associated with expressions of anger[17]; thus, depressed clients may be likely to complain or have angry outbursts, which represents a burden transfer from the client to the veterinarian.

Understanding burden transfer is crucial because it represents a potentially modifiable risk factor for stress and burnout in veterinarians. On the basis of results of a recent study[14] conducted by our research group, we proposed that decreasing caregiver burden of clients might indirectly help decrease stress for veterinarians. However, a more direct intervention could also be useful for decreasing veterinarian stress. Previous suggestions for amelioration of veterinarian stress and burnout include encouraging discussion about mental health among veterinarians, changing the veterinary practice work environment to improve support, and mindfulness-based interventions,[18–21] but solutions to this complex problem remain elusive. A skills-based educational intervention tailored specifically to address stressful veterinarian-client interactions could help veterinarians become resilient to burden transfer from clients and alleviate resultant stress and burnout. But before such an intervention can be developed, client burden transfer must be reliably defined, identified, and measured. The purpose of the study reported here was to create and validate a measure of common client behaviors within the context of companion animal caregiving, to evaluate whether those behaviors are associated with client caregiver burden, and to determine whether those behaviors contribute to veterinarian stress.

Materials and Methods

Study design

The study was a cross-sectional psychometric validation study and was conducted in 3 stages. All study procedures were reviewed and approved by the Kent State University Institutional Review Board.

Stage 1

Stage 1 was conducted between August 2016 and February 2018. The purpose of this stage was to create and pilot test potential questions (items) for a scale to measure burden transfer. To create the items, during veterinary staff meetings at each of 4 local small animal primary-care clinics and hospitals and 1 large non–university-affiliated specialty and emergency hospital, the lead investigator (MBS) gave a presentation in which the study was introduced and explained to potential participants, who were also provided an opportunity to ask questions about the study. At the end of the presentation, all veterinarians who were eligible to participate in the study were provided an exploratory survey along with a self-addressed, stamped envelope in which they could return the survey to the investigators. To participate in the exploratory survey, veterinarians had to routinely interact with clients. Veterinarians (n = 19) who chose to participate completed the survey on their own time and returned it to researchers. Because the investigative team had prior knowledge regarding stress and veterinarian-client interactions and planned to combine that knowledge with practicing veterinarian survey responses, a small sample size was considered sufficient, which is why recruitment efforts were limited to only 5 veterinary hospitals.

The exploratory survey consisted of open-ended questions designed to generate an item pool of client interactions that are stressful for veterinarians, with a particular focus on interactions involving owners of companion animals with a chronic or terminal illness. A flexible inductive-deductive approach was used to assess the survey responses and develop an initial item pool that subsequently underwent standard psychometric analyses[22] to develop the final BTI measure. Prior to study initiation, we conducted a literature review related to veterinarian stress, with particular attention focused on previously identified stressors considered by the research team to likely involve or be caused by interactions with clients experiencing caregiver burden. The item pool was then generated in a stepwise manner. Survey responses were reviewed and thematically collated. Interactions cited by > 1 respondent or cited by only 1 respondent but receiving concurrence by veterinarians on the research team were considered further. Those interactions (or items) were incorporated into 3 different iterations of the survey, refined at each level through a series of 3 pilot tests conducted with small groups of veterinarians recruited locally and through VIN. During those tests, the research team received feedback regarding the identified items including perceived problems with the item definitions, missing items, and survey response format and wording. The pilot tests led to changes in the survey response format, the addition of an item that was not identified in the exploratory survey, and helped the researchers refine survey wording (eg, distinction between clients who are unwilling to pay and those who are unable to pay).

Stage 2

Stage 2 was conducted during March and April of 2018. The purpose of this stage was to assess veterinarian responses to the refined survey generated

during stage 1, conduct item analyses to determine which items should be retained or removed from the final scale, and to validate the final BTI. The survey also contained questions designed to obtain demographic information and previously validated measures to assess veterinarian stress and burnout. A mass email explaining the purpose of and containing a link to the survey was sent to 37,305 veterinarians who were VIN members. A reminder email was sent 2 weeks after the initial email. To be eligible to complete the survey, participants had to be able to read and understand English and be currently employed as practicing veterinarians who had direct interactions with companion animal owners on a routine basis. Veterinarians who participated in generating items did not participate in stage 2.

The survey was hosted on an online platform.[a] The survey purpose, as described to potential respondents, was to assess how "daily interactions with clients affect you." The 34 client-interaction items were formatted in third person (eg, "the client declines recommended work-up"). Respondents were asked to consider their past week and rate the frequency with which each item occurred on a 5-point scale, where 0 = never occurred and 4 = more often than daily; "not applicable" was also provided as an option for each item. Respondents were also asked to rate their reaction to each item on a 5-point scale, where 0 = not bothered or upset and 4 = extremely bothered or upset; "has not occurred" was also provided as an option for each item. The final BTI measure consisted of 33 client behaviors and interactions and 1 "other" category, where respondents could list other concerns (**Supplementary Appendix S1**, available at avmajournals.avma.org/doi/suppl/10.2460/javma.254.1.133).

Respondent stress and burnout were assessed by means of the PSS[23] and CBI.[24] The PSS is a measure of stress perception and consists of 10 items that address the degree of a respondent's current stress and feelings that life is unpredictable and overloaded. Each item was ranked on a 5-point scale, where 0 = never and 4 = very often; the scores were summed in accordance with measure instructions to calculate the overall PSS score. Thus, the total PSS score should be positively associated with an individual's level of stress. The psychometric properties of the PSS score include an internal consistency (Cronbach α) that ranges from 0.68 to 0.78 and a convergent validity (including prediction of anxiety and anger) that ranges from 0.54 to 0.68.[25]

The CBI consists of 19 items that address issues related to personal, work-related, and client-related burnout. Each item was again ranked on a 5-point scale, where 0 = never or almost never or to a very low degree and 4 = always or to a very high degree (phrasing of the scale rankings varied depending on the nature of the question). The rankings for each item were summed and the total converted to a mean percentage to calculate overall CBI scores. The CBI scores for each subscale (personal, work-related, and client-related) should be positively associated with an individual's level of burnout. The psychometric properties of the CBI score include a very high internal consistency (Cronbach α range, 0.85 to 0.87) and evidence of construct validity (including discriminant validity owing to negative correlations with measures of mental health and vitality [r range, −0.39 to −0.75]).[24]

Stage 3

Stage 3 was conducted during May 2018. The purpose of this stage was to ascertain whether the client behaviors and veterinarian-client interactions identified and assessed by veterinarians during the surveys of stages 1 and 2 were associated with client caregiver burden. Dog and cat owners were recruited through a social media platform[b] to participate in an online research study. The group administrator or moderator for each of 18 pet disease groups (**Supplementary Appendix S2**, available at avmajournals.avma.org/doi/suppl/10.2460/javma.254.1.133) hosted by the social media platform was contacted by investigators to explain the purpose of the study. With the group administrator's or moderator's approval, a single post with a link to the survey was sent to each member of the group. Collectively, the 18 targeted groups consisted of 6,414 members. Participants had to be ≥ 18 years old, able to read and understand English, and currently caring for a dog or cat with a chronic or terminal illness and actively accessing veterinary services to provide that care. A chronic disease was defined as a disease that lasts for > 3 months and cannot be cured but will not necessarily limit the pet's life expectancy, whereas a terminal disease was defined as a progressive disease that cannot be reversed or cured and will limit the pet's life expectancy.

The survey was hosted on an online platform.[c] The purpose of the survey, as described to potential respondents, was to "understand how experiences of owning a cat or dog with chronic health problems or terminal illness relate to decisions, thoughts, feelings, and behaviors in the context of the pet's health care." Because the owners of dogs and cats with a chronic or terminal illness were the target population, surveys completed by respondents who categorized their pets as being in "good health" or having a "curable disease" (defined as a disease that can be effectively cured and will not limit the pet's life expectancy) were removed from the analysis. The survey consisted of the same client interaction items assessed by veterinarians who participated in the stage 2 survey; however, those items were formatted in first person to more accurately reflect actual client behavior (eg, "I have declined work-up recommended by a veterinary care provider"). To avoid inaccurate responses owing to social desirability, some items were framed with less negative language. For example, the stage 2 item, "client makes a complaint about you" was reworded as "I have spoken out in a negative way about my veterinary care provider" for the client survey. Interspersed within

the survey were 4 positive client-behavior items (eg, "I have paid in full for veterinary services that were provided"), but those items were not included in the data analyses. Within the context of their current situation of providing care to a pet with a chronic or terminal illness, respondents were asked to rank each item on a 5-point scale, where 0 = never and 4 = always. Respondents were also asked to provide demographic information and complete an adapted ZBI. Respondents could complete the survey anonymously or provide their contact information and be entered in a drawing to win 1 of 3 $50 gift cards for an online retailer.

The ZBI was originally developed to measure caregiver burden among relatives of elderly humans[26] and has since been adapted and validated to assess caregiver burden for owners of ill companion animals and veterinary clients.[12,14] Briefly, the adapted ZBI is a self-report inventory that consists of 18 items that assess the respondent's experience associated with providing care to a sick companion animal including the impact that caring for a sick pet has on the respondent's life and affective experiences. It was calculated as described.[14] The psychometric properties of the adapted ZBI include a high internal consistency (Cronbach α range, 0.90 to 0.92) and negative correlation with measures of quality of life (r range, −0.54 to −0.59).

For both the stage 2 and stage 3 online surveys, the survey landing page informed potential participants of the study's purpose, their right to discontinue the survey at any time, institutional review board approval status, and contact details for the primary investigator (MBS) and local review board. Respondents provided implied consent by advancing to the next page of the survey.

Statistical analysis

All statistical analyses were performed with commercially available software.[d] Demographic data were summarized with descriptive statistics for the respondents of each survey. Values of $P < 0.01$ were considered significant unless otherwise indicated.

The veterinarians who participated in the stage 2 survey were randomly divided into 2 groups by use of statistical analysis software[d] to randomly sample approximately 50% of the cases in the total sample. Randomly selected cases were assigned to VIN-1, and unselected cases were assigned to VIN-2. The VIN-1 group was used to finalize and assign scale to items used for the BTI (ie, scale development and exploratory analysis), and the VIN-2 group was used to validate the BTI (ie, confirmatory analysis). Demographic data and primary measures (BTI, PSS, and CBI scores) were compared between the 2 groups by means of t tests (continuous variables) or χ^2 tests (ordinal and nominal variables) to ensure that the groups did not differ significantly ($P < 0.01$). For the VIN-1 group, the frequency scores for the 34 survey items underwent factor analysis with varimax rotation to identify subscales. Examination of the initial scree plot suggested the presence of 1 large factor and several smaller potential factors. The factor analysis was serially repeated, separately forcing extraction and rotation of 2, 3, 4, 5, 6, 7, 8, and 9 factors. Factor loadings were examined for each solution, and a 7-factor solution was chosen on the basis of maximization of factors and conceptual fit. Provisional scales were constructed for each of the 7 factors; items were assigned to each scale on the basis of their highest factor loading. The internal consistency was determined for each scale. Briefly, the contribution of each individual item to the scale was assessed, and any item that attenuated the reliability of the scale score was removed from that scale. One item (client mental health) was removed because it reduced the internal consistency of the scale score, and 4 scales were collapsed into 2 scales to improve reliability, resulting in 5 subscales. Then, the final scale score was assessed for internal consistency (ie, the Cronbach α was calculated) and evidence of convergent validity, which was evaluated by calculation of the bivariate Pearson correlation coefficients (r) between total client BTI score and the overall PSS and CBI scores. To confirm validation of the final BTI measure, the same analytic methods were applied to the frequency data for the VIN-2 group. Finally, hierarchical linear regression was used to examine the unique contribution of the final BTI subscales for prediction of stress (PSS score) and burnout (CBI score for personal, work-related, and client-related burnout) in veterinarians. For each outcome of interest (veterinarian stress and burnout), the BTI subscale frequency scores were entered into an initial regression model to evaluate the contribution of each subscale to the overall PSS score or CBI score. Then, a second level of each regression model was created in which the BTI subscale reaction scores were evaluated to determine whether the reactions of veterinarians to specific client behaviors or interactions were predictive of veterinarian stress and burnout above and beyond the predictive ability of the frequency scores. The mean ± SD BTI scores for the 5 subscales individually and collectively for all stage 2 survey respondents (ie, VIN-1 and VIN-2 groups combined) were used to calculate score-based normative categories for the BTI, and the frequency of modal responses for each subscale were examined.

Descriptive statistics were generated to summarize the demographics and primary measures (BTI subscale frequency scores and adapted ZBI score) for respondents of the stage 3 survey. The bivariate Pearson correlation coefficients between the adapted ZBI score and each BTI subscale frequency score were calculated to assess the association between client caregiver burden and specific client behaviors assessed in the BTI.

Results

Stage 1

Nineteen veterinarians completed the exploratory survey that was used to generate the initial item

pool for the BTI, and the demographics for those veterinarians have been described in detail elsewhere.[27] Briefly, the respondents included 11 general practitioners, 2 emergency practitioners, and 6 board-certified specialists in small animal internal medicine, oncology, neurology-neurosurgery, and cardiology and had been in practice for a mean ± SD of 16.52 ± 9.58 years (range, 3 months to 35 years).

Stage 2

The stage 2 survey was emailed to 37,305 VIN members and was completed by 1,170. Nineteen sur-

Table 1—Descriptive statistics for 1,151 practicing veterinarians who participated in an online survey to assess (VIN-1 group; n = 578) and validate (VIN-2 group; 573) a BTI (stage 2).

Variable	Category or BTI subscale	VIN-1 group	VIN-2 group
Age (y)	—	45.5 ± 11.3	46.2 ± 11.7
Time since graduation (y)	—	17.8 ± 11.3	18.5 ± 11.7
Gender	Female	475 (82)	456 (80)
	Male	103 (18)	111 (20)
Marital status	Married	394 (68)	394 (69)
	Committed relationship or significant other	48 (8)	48 (8)
	Divorced	43 (7)	24 (4)
	Never Married	82 (14)	89 (16)
	Other	10 (2)	16 (3)
Race	White	524 (91)	520 (91)
	Asian	16 (3)	15 (3)
	Hispanic	10 (2)	9 (2)
	Black	2 (< 1)	2 (< 1)
	Other	12 (2)	9 (2)
	Prefer not to say	10 (2)	17 (3)
Practice type	Small animal only	477 (83)	491 (86)
	Small animal and exotics	69 (12)	49 (9)
	Mixed animal	24 (4)	27 (5)
	Other	6 (1)	3 (1)
Employment status	Associate	316 (55)	287 (50)
	Owner or partner	211 (37)	227 (40)
	Relief veterinarian	19 (3)	23 (4)
	Mobile veterinarian	2 (< 1)	6 (1)
	Other	25 (4)	27 (5)
Typical No. of hours worked each week	—	43.2 ± 11.6	43.7 ± 12.2
PSS score	—	17.8 ± 6.3	18.3 ± 6.8
CBI score	Personal burnout	51.4 ± 20.4	53.0 ± 20.1
	Work-related burnout	46.8 ± 21.7	48.8 ± 22.7
	Client-related burnout	45.2 ± 23.7	46.8 ± 25.1
BTI frequency	Daily hassles	20.6 ± 6.6	21.3 ± 6.3
	Nonadherent-inconsiderate	18.1 ± 5.6	18.4 ± 5.2
	Affect	7.4 ± 2.3	7.4 ± 2.1
	Confrontation	13.0 ± 4.7	13.3 ± 4.6
	Excess communication	3.0 ± 1.7	3.1 ± 1.7
	Total	**61.1 ± 17.7**	**62.4 ± 18.1**
BTI reaction	Daily hassles	12.7 ± 7.1	13.4 ± 7.5
	Nonadherent-inconsiderate	11.6 ± 5.6	11.9 ± 5.8
	Affect	2.6 ± 2.0	2.7 ± 2.0
	Confrontation	6.5 ± 6.4	6.8 ± 6.7
	Excess communication	1.5 ± 1.6	1.6 ± 1.7
	Total	**35.0 ± 17.6**	**35.6 ± 19.3**

Values represent the mean ± SD or number (percentage). Percentages were rounded to the nearest integer; therefore, the category percentages do not sum to 100 for some variables. Respondents were not required to answer all survey questions; therefore, the number of responses varied among variables. All respondents were members of the VIN, and the completed surveys were randomly assigned to 2 groups. The PSS is a measure of perceived stress and consists of 10 items, each of which is ranked on a scale of 0 (never) to 4 (very often); thus, the maximum possible PSS score was 40. The CBI consists of 19 items that address issues related to personal, work-related, or client-related burnout; each item is ranked on a scale of 0 (never or very low degree) to 4 (always or very high degree). The BTI consisted of 33 items, each of which was ranked in regard to the frequency with which it occurs and the respondent's reaction to the item occurring; both frequency and reaction were scored on a scale of 0 (never occurred or not bothered or upset) to 4 (occurs multiple times daily or extremely bothered or upset). For each respondent, the frequency and reaction scores for the 5 BTI subscales were summed to calculate the total BTI frequency and total BTI reaction scores. None of the values differed significantly ($P < 0.01$) between the 2 groups.

— = Not applicable.

veys were subsequently excluded from the analysis because respondents worked in an environment where they did not have contact with clients. Thus, 1,151 completed surveys were evaluated; 578 were assigned to the VIN-1 (scale development and exploratory) group and 573 were assigned to the VIN-2 (confirmatory) group. None of the variables assessed differed significantly between the 2 groups **(Table 1)**; therefore, the randomization procedure was considered successful.

Scale creation and assessment of the BTI—Frequency data for the VIN-1 group underwent factor analysis to assess the BTI, the results of which led to the identification of 5 subscales (daily hassles, nonadherent-inconsiderate, affect, confrontation, and excess communication). The internal consistency (Cronbach α) was 0.88 for daily hassles, 0.84 for nonadherent-inconsiderate, 0.75 for affect, 0.81 for confrontation, and 0.58 for excess communication. The internal consistency was 0.93 for the overall frequency score for all 5 subscales combined. The magnitude of the correlation between each item and its scale, derived through item analyses, was reported **(Table 2)**. For the reaction scores, the internal consistency was 0.82 for daily hassles, 0.80 for nonadherent-inconsiderate, 0.72 for affect, 0.55 for confrontation, 0.53 for excess communication. The internal consistency was 0.90 for the overall reaction score for all 5 subscales combined. Both the BTI frequency and reaction scores for the 5 subscales (individually and collectively) were significantly and positively correlated with the PSS score as well as the CBI personal, work-related, and client-related scores **(Table 3)**.

Validation of the BTI—The frequency and reaction data for the VIN-2 group were evaluated for internal consistency and validity in the same manner as that for the VIN-1 group. The frequency scores had an internal consistency of 0.88 for daily hassles, 0.85 for nonadherent-inconsiderate, 0.70 for affect, 0.83 for confrontation, and 0.64 for excess communication. The internal consistency was 0.94 for the overall frequency score for all 5 subscales combined. The

Table 2—Corrected Pearson correlation coefficients between the frequency score for each BTI item and the BTI subscale to which it was assigned for the VIN-1 group.

BTI item	BTI subscale	*r*
Poor memory for instructions	Daily hassles	0.65
Shows poor comprehension		0.63
Listens to advice of others		0.64
Inefficient communication		0.61
Requires repeated communication		0.62
Alters treatment plan without consulting you		0.59
Conducts online "research"		0.61
Wants impossible prediction		0.63
Wants to discuss own problems		0.57
"Shops around" to compare cost		0.50
Declines recommended treatment	Nonadherent-inconsiderate	0.64
Wants diagnosis without testing		0.54
Declines recommended work-up		0.73
Complains about cost		0.59
No shows for appointment		0.46
Calls when appointment more appropriate		0.59
Slow to make decisions in exam room		0.58
Immediate appointment unavailable		0.46
Demonstrates grief or sadness	Affect	0.66
Requires euthanasia counseling		0.60
Demonstrates anxiety		0.48
Makes complaint about you	Confrontation	0.37
Makes complaint about your workplace		0.50
Blames you for poor outcomes		0.57
Wants cure when there is none		0.52
Declines recommended euthanasia		0.36
Upset about lobby wait time		0.47
Angry about patient health status		0.50
Unable to pay		0.57
Unwilling to pay		0.55
Requests services free of charge		0.56
Unsolicited phone contact	Excess communication	0.41
Unsolicited email contact		0.41

Correlations reflect responses of 578 veterinarians (VIN-1 sample) to BTI items. Items included are the end-product of a flexible inductive-deductive psychometric development. The BTI item list was generated through researcher literature review, responses to an exploratory open-ended survey that was completed by a convenience sample of 19 small animal veterinarians who routinely interacted with clients, and 3 pilot tests through local and VIN-recruited convenience samples of practicing veterinarians to refine items. Psychometric scale development based on these items was conducted through factor and item analyses.

Table 3—Pearson correlation coefficients between the BTI scores for the 5 BTI subscales and the PSS total score, and CBI personal, work-related, and client-related scores for the VIN-1 and VIN-2 groups (stage 2).

Group	BTI scale	BTI subscale	PSS score	CBI personal score	CBI work-related score	CBI client-related score
VIN-1	Frequency	Daily hassles	0.22	0.24	0.28	0.31
		Nonadherent-inconsiderate	0.21	0.22	0.28	0.31
		Affect	0.13	0.14	0.19	0.16
		Confrontation	0.22	0.24	0.31	0.33
		Excess communication	0.17	0.19	0.21	0.20
		Total for all 5 subscales	**0.25**	**0.26**	**0.33**	**0.35**
	Reaction	Daily hassles	0.41	0.41	0.44	0.48
		Nonadherent-inconsiderate	0.39	0.38	0.40	0.46
		Affect	0.38	0.32	0.35	0.35
		Confrontation	0.33	0.33	0.38	0.41
		Excess communication	0.31	0.30	0.33	0.34
		Total for all 5 subscales	**0.46**	**0.45**	**0.50**	**0.70**
VIN-2	Frequency	Daily hassles	0.16	0.23	0.24	0.28
		Nonadherent-inconsiderate	0.18	0.26	0.28	0.29
		Affect	0.09	0.19	0.21	0.18
		Confrontation	0.15	0.21	0.26	0.29
		Excess communication	0.09*	0.13	0.16	0.20
		Total for all 5 subscales	**0.18**	**0.21**	**0.29**	**0.32**
	Reaction	Daily hassles	0.30	0.33	0.40	0.43
		Nonadherent-inconsiderate	0.38	0.40	0.44	0.42
		Affect	0.27	0.26	0.27	0.29
		Confrontation	0.26	0.30	0.36	0.37
		Excess communication	0.18	0.21	0.23	0.28
		Total for all 5 subscales	**0.39**	**0.43**	**0.49**	**0.50**

The stage 2 survey was completed by 1,151 small animal veterinarians who were VIN members and had routine interactions with clients. The completed surveys were randomly assigned to 2 groups. Surveys assigned to the VIN-1 group (n = 578) were used to assess the BTI, and surveys assigned to the VIN-2 group (573) were used to validate the BTI. All correlation coefficients differed significantly ($P \leq 0.001$) from 0 unless otherwise indicated.

*$P < 0.05$.

Table 4—Final hierarchal linear regression model for prediction of the PSS score in veterinarians from the BTI.

BTI scale	BTI subscale	R^2	Unstandardized β	SE	Standardized β	*P* value
Frequency	—	0.07	—	—	—	< 0.001
	Daily hassles		– 0.10	0.09	–0.09	0.26
	Nonadherent-inconsiderate		– 0.10	0.09	–0.07	0.29
	Affect		– 0.08	0.15	–0.03	0.60
	Confrontation		< 0.01	0.12	< 0.01	0.99
	Excess communication		– 0.19	0.22	–0.05	0.41
Reaction	—	0.27		—	—	< 0.001
	Daily hassles		0.20	0.06	0.22	0.002
	Nonadherent-inconsiderate		0.12	0.08	0.10	0.13
	Affect		0.78	0.15	0.23	< 0.001
	Confrontation		0.15	0.08	0.15	0.05
	Excess communication		0.61	0.22	0.16	0.007

β = Regression coefficient. — = Not applicable.

Table 5—Final hierarchal linear regression model for prediction of the CBI personal burnout score from the BTI.

BTI scale	BTI subscale	R^2	Unstandardized β	SE	Standardized β	*P* value
Frequency	—	0.07	—	—	—	< 0.001
	Daily hassles		– 0.07	0.07	– 0.09	0.29
	Nonadherent-inconsiderate		– 0.09	0.07	– 0.09	0.19
	Affect		0.01	0.12	< 0.01	0.94
	Confrontation		0.04	0.09	0.04	0.65
	Excess communication		– 0.03	0.17	– 0.01	0.87
Reaction	—	0.22	—	—	—	< 0.001
	Daily hassles		0.15	0.05	0.23	0.001
	Nonadherent-inconsiderate		0.11	0.06	0.13	0.06
	Affect		0.40	0.11	0.16	< 0.001
	Confrontation		0.09	0.06	0.12	0.13
	Excess communication		0.35	0.17	0.12	0.04

β = Regression coefficient. — = Not applicable.

reaction scores had an internal consistency of 0.87 for daily hassles, 0.76 for nonadherent-inconsiderate, 0.69 for affect, 0.61 for confrontation, and 0.76 for excess communication. The internal consistency was 0.92 for the overall reaction score for all 5 subscales combined. The internal consistency was 0.90 for the PSS score and ranged from 0.89 to 0.93 for the 3 CBI scores. Similar to the VIN-1 group, the BTI frequency and reaction scores for the 5 subscales (individually and collectively) were significantly and positively correlated with the PSS score as well as the CBI personal, work-related, and client-related scores (Table 3).

During hierarchical linear regression analyses to evaluate the BTI contribution for prediction of veterinarian stress and burnout, we first calculated the coefficient of determination (R^2) for the model with only the frequency subscale data. Then, the reaction subscale data were added to the model, and the change in R^2 (ΔR^2) was assessed. The BTI frequency subscale data accounted for 5.9%, 6.8%, 11%, and 13.1% of the

Table 6—Final hierarchal linear regression model for prediction of the CBI work-related burnout score from the BTI.

BTI scale	BTI subscale	R^2	Unstandardized β	SE	Standardized β	*P* value
Frequency	—	0.11	—	—	—	< 0.001
	Daily hassles		– 0.17	0.08	– 0.17	0.03
	Nonadherent-inconsiderate		– 0.02	0.08	– 0.02	0.77
	Affect		0.06	0.14	0.02	0.66
	Confrontation		0.18	0.11	0.13	0.09
	Excess communication		– 0.06	0.20	– 0.02	0.76
Reaction	—	0.28	—	—	—	< 0.001
	Daily hassles		0.24	0.06	0.28	< 0.001
	Nonadherent-inconsiderate		0.07	0.07	0.06	0.37
	Affect		0.58	0.14	0.18	< 0.001
	Confrontation		0.09	0.07	0.09	0.22
	Excess communication		0.51	0.21	0.14	0.01

β = Regression coefficient. — = Not applicable.

Table 7—Final hierarchal linear regression model for prediction of the CBI client-related burnout score from the BTI.

BTI scale	BTI subscale	R^2	Unstandardized β	SE	Standardized β	*P* value
Frequency	—	0.13	—	—	—	< 0.001
	Daily hassles		– 0.11	0.07	– 0.11	0.13
	Nonadherent-inconsiderate		– 0.03	0.08	– 0.02	0.73
	Affect		– 0.10	0.13	– 0.04	0.44
	Confrontation		0.21	0.10	0.16	0.03
	Excess communication		– 0.23	0.19	– 0.07	0.21
Reaction	—	0.32	—	—	—	< 0.001
	Daily hassles		0.21	0.05	0.26	< 0.001
	Nonadherent-inconsiderate		0.15	0.07	0.14	0.03
	Affect		0.50	0.13	0.16	< 0.001
	Confrontation		0.05	0.07	0.05	0.46
	Excess communication		0.59	0.19	0.17	0.002

β = Regression coefficient. — = Not applicable.

Table 8—Cutoff values used to define the descriptive categories for BTI measures.

BTI scale	BTI subscale	Average	Mild elevation	Moderate elevation	Severe elevation
Frequency	Daily hassles	< 27	27–34	35–41	> 41
	Nonadherent-inconsiderate	< 24	24–29	30–35	> 35
	Affect	< 10	10–12	13–14	> 14
	Confrontation	< 18	18–23	24–27	> 27
	Excess communication	< 5	5–7	8	> 8
	Overall	< 80	81–98	99–116	> 116
Reaction	Daily hassles	< 20	20–28	29–35	> 35
	Nonadherent-inconsiderate	< 17	17–23	24–29	> 29
	Affect	< 5	5–7	8–9	> 9
	Confrontation	< 13	13–20	21–26	> 26
	Excess communication	< 3	3–5	6	> 6
	Overall	< 54	54–72	73–91	> 91

The cutoff value was defined as < 1 SD, 1 to 2 SD, > 2 to 3 SD, and > 3 SD from the mean for the average, mild elevation, moderate elevation, and severe elevation categories, respectively.

variance in the PSS (R^2 = 0.06; P < 0.001), CBI personal burnout (R^2 = 0.07; P < 0.001), CBI work-related burnout (R^2 = 0.34; P < 0.001), and CBI client-related burnout (R^2 = 0.13; P < 0.001) scores, respectively. When the BTI reaction subscale data were added to the respective models, the BTI data collectively accounted for 25.2%, 21.9%, 27.9%, and 30.7% of the variation in the PSS (ΔR^2 = 0.20; P < 0.001; **Table 4**), CBI personal burnout (ΔR^2 = 0.16; P < 0.001; **Table 5**), CBI work-related burnout (ΔR^2 = 0.16; P < 0.001; **Table 6**), and CBI client-related burnout (ΔR^2 = 0.18; P < 0.001; **Table 7**) scores, respectively.

Normative interpretation of the BTI—The BTI data for the VIN-1 and VIN-2 groups were combined, and the mean ± SD frequency and reaction scores for each subscale were used to define 4 score-based categories (average, mild elevation, moderate elevation, and severe elevation) to facilitate interpretation of the BTI. The cutoff values used to define those 4 categories for the 5 BTI subscales individually and collectively were summarized **(Table 8)**. The modal frequency response was "1 to 2 times in the past week" for the daily hassles, nonadherent-inconsiderate, and affect subscales and "has occurred but not in the past week" for the confrontation and excess communication subscales. The modal reaction response was "a little" for the affect subscale; ranged from "a little" to "moderately" for the daily hassles, nonadherent-inconsiderate, and excess communication subscales; and ranged from "moderately" to "extremely" for the confrontation subscale.

Table 9—Descriptive statistics for 372 owners of dogs and cats with a chronic or terminal illness who completed a survey designed to understand how caring for such animals affected their decisions, thoughts, feelings, and behaviors within the context of the pet's health care (stage 3).

Variable	Category	Value
Respondent age (y)	—	47.9 ± 12.6
Gender	Female	365 (98)
	Male	7 (2)
Race	White	343 (92)
	Asian	6 (2)
	Hispanic	10 (3)
	Black	2 (1)
	Other	10 (3)
Pet age (y)	—	9.6 ± 4.6
Pet species	Cat	109 (29)
	Dog	263 (71)
Nature of the pet's primary disease process	Cardiological	12 (3)
	Dermatologic	12 (3)
	Internal medicine	234 (68)
	Oncological	37 (11)
	Neurologic	50 (14)
Adapted ZBI score	—	24.4 ± 11.1
Total BTI score	—	36.2 ± 12.2

The adapted ZBI score is a measure of caregiver burden and consisted of 18 items, each of which was ranked on a scale of 0 (never) to 4 (nearly always); thus, the maximum possible adapted ZBI score was 72. The BTI consisted of the same 33 items as those used in the stage 2 survey described in Table 1, but the items were framed in first person for this part of the study. Each BTI item was ranked on a scale of 0 (never) to 4 (always).

See Table 1 for remainder of key.

Stage 3

The stage 3 survey was completed by a total of 380 pet owners. Eight of the completed surveys were excluded from analysis because the pets were species other than a dog or cat (n = 2), the pet was deceased (3), or the pet was described as healthy (3). Thus, a total of 372 completed surveys were analyzed.

Descriptive data for the 372 respondents were summarized **(Table 9)**. The internal consistency was 0.89 for the adapted ZBI score and 0.82 for the total BTI score. There was a significant (P < 0.001) positive correlation (r = 0.53) between the adapted ZBI score and total BTI score for the stage 3 survey respondents.

Discussion

In the present study, we developed and validated a BTI to assess and better understand the relationship between client behaviors and the level of stress and burnout for practicing veterinarians. The client behaviors and interactions assessed in the BTI were identified as being stressful by pilot groups of small animal veterinarians, particularly within the context of working with clients who are caring for a pet with a chronic or terminal illness. The identified client behaviors and interactions were then rated by a large group of small animal veterinarians through an online survey, and the survey results underwent a combination of factor and item analyses. On the basis of these analyses, each item (client behavior or interaction) was assigned to 1 of 5 subscales (daily hassles, nonadherent-inconsiderate, affect, confrontation, and excess communication) to facilitate modeling and interpretation of the final BTI measure. The behaviors described in BTI items were also assessed by owners of dogs and cats with a chronic or terminal illness. An increase in the self-reported frequency of those items by owners of a chronically or terminally ill dog or cat was robustly and positively correlated with a measure of caregiver burden (adapted ZBI score) for respondents. Likewise, there was a significant positive correlation between the self-reported BTI scores and measures of perceived stress (PSS score) and burnout (CBI scores) for veterinarians. Moreover, although the frequency of the assessed client behaviors and interactions significantly contributed to veterinarian stress and burnout, a veterinarian's reaction (ie, the extent to which they reported being upset or bothered by a particular item) was a far more important predictor of that individual's level of stress and burnout.

Relative to the normative populations of other studies,[23,24] the veterinarians of the present study had higher mean levels of stress and burnout. The items that comprised the BTI subscales identified in the present study were consistent with risk factors for veterinarian stress and burnout identified in other studies.[10,11] Results of the present study indicated that the reactions of veterinarians to multiple client behaviors were significantly associated with stress and burnout, with behaviors categorized in the daily hassles,

affect, and excess communication subscales being the strongest predictors of stress and burnout. The affect subscale captured elements associated with anticipatory client grief (eg, sadness, anxiety, and euthanasia counseling), so it was not surprising that the scores for that subscale were strongly predictive of veterinarian stress and burnout because compassion fatigue has long been identified as an important occupational hazard for veterinarians.[2] In the present study, the modal reaction response was "only a little" for most of the items in the affect subscale; however, the respondents indicated that those interactions occurred frequently (ie, on a weekly basis or more often). That finding was consistent with the concept of compassion fatigue and suggested that repeated exposure to those interactions could have a cumulative effect in terms of veterinarian stress and burnout. It was also not surprising that items within the excess communication subscale were important predictors of veterinarian stress and burnout. Although some degree of indirect (eg, telephone or email) communication with clients is inherent in veterinary practice, the frequency of that type of communication has a strong positive relationship with client caregiver burden.[14] Additional indirect communication could increase workload, another well-established occupational stressor for veterinarians.[11]

Items assigned to the daily hassles subscale included ordinary behaviors, such as clients demonstrating poor memory or comprehension, altering the patient treatment plan without consulting the veterinarian, conducting online research, or shopping around to compare costs. Those items, although not commonly evaluated in veterinary medicine, substantially contributed to stress and burnout for the veterinarians of the present study. Previous studies[10,11] have focused on client issues with strong affective components (eg, grief) or intuitively clear links to stress (eg, complaints, nonpayment, or nonadherence). In the present study, daily hassles were consistently and more robustly linked to veterinarian stress and burnout than several other client interactions including those in the nonadherent-inconsiderate subscale, such as clients who decline diagnostic workup or treatment, do not show up for an appointment, or demand an appointment when none are available. Similar to items in the affect subscale, the items in the daily hassles subscale typically elicited only a mild negative reaction from veterinarians, but they occurred frequently and likely had a cumulative effect on veterinarian stress and burnout. This finding was consistent with results of another study,[28] which indicate that daily hassles, and more importantly negative reactions to those hassles, are among the most robust predictors of general stress and health in middle-aged and older adults.

Results of the present study indicated that the reactions of veterinarians to many of the client behaviors and interactions were far more important than the frequency of those events for prediction of veterinarian stress and burnout. Notable exceptions were the items of the confrontation subscale, for which the frequency of those events was a more important predictor of stress and burnout than was the veterinarian's reaction. That finding suggested that confrontational interactions might be resistant to coping. Results of another study[10] indicate that many of the items included in the confrontation subscale of the present study (eg, clients who are unable or unwilling to pay or who have unrealistic expectations) are significant practice-related stressors for veterinarians. In the present study, items in the confrontation subscale generally occurred less frequently than did items in the other subscales, but they typically elicited strong negative reactions. However, it should be noted that, relative to the other subscales, only a small number of veterinarians reported recent confrontational interactions, and the results for the confrontation subscale may have been driven by the recency of the experiences.

Interestingly, the owners of dogs and cats with a chronic or terminal illness reported engaging in the client behaviors included in the BTI survey, and the frequency with which they engaged in those behaviors was positively correlated with the level of caregiver burden they were experiencing. Therefore, it is logical to consider that the client behaviors and interactions included in the BTI are, at least partially, driven by distress or prompted by strain associated with caring for a sick pet; and if that is true, then decreasing the caregiver burden of clients should decrease the frequency of negative veterinarian-client interactions and ultimately benefit veterinarians. Results of a recent study[27] of veterinary client caregiver burden suggest several potentially modifiable targets that may respond to intervention, including enhancing the client's sense of control in the situation and finding practical solutions to augment the client's response to their pet's problems. Further research is necessary to assess cost-effective methods for decreasing client caregiver burden, such as technology-based support and the role of allied mental health professionals.

In the present study, veterinarians' reactions to the assessed client behaviors generally overshadowed the frequency with which those behaviors occurred in terms of predicting veterinarian stress and burnout. Therefore, altering client behavior is not the only intervention that may improve veterinary stress and burnout. A 2-pronged approach to lessening veterinary stress may be beneficial. As previously discussed, one of those prongs should focus on reducing client caregiver burden, which should decrease the frequency of stressful veterinarian-client interactions and indirectly reduce veterinarian stress. The other prong should target modifying the stress response of veterinarians, possibly through strategic strengthening of coping skills, such as training veterinarians to place undesirable client behaviors into context and identifying alternatives for viewing such behaviors. The BTI developed and validated in the present study can be used as a foundation for future research into tactical solutions to directly reduce veterinarian

stress. It allows independent measurement of stressful client interactions and provides normative data to understand how a respondent functions within each domain. Future steps should include development of a targeted, skills-based, educational approach for modifying reactivity to the various domains of stressful client interactions.

The BTI developed in the present study might also be used by mental health providers who work with veterinary care professionals. Social workers who provide services to veterinarians and veterinary students can use the normative data generated by the BTI to glean an enhanced understanding of the stressors affecting their clients. For veterinarians or veterinary students who experience stressful client interactions at an unusually high frequency, examination of their typical routines and work environments may help identify why those interactions are occurring and assist in the development of interventions to ameliorate stressors. Conversely, for veterinarians whose normative reactions to stressful client interactions are disproportionately greater than the frequency of those interactions, treatment should focus on personality or interpersonal factors that are contributing to those reactions. Thus, the BTI can be used to help streamline treatment for distressed veterinarians and veterinary students.

The present study was not without limitations. A fairly small group of veterinarians helped to generate and refine the initial BTI item pool (stage 1). Additional items not reflected in the BTI might have been identified had a larger or different group of veterinarians been surveyed. Because the focus of this study was to develop scales to reflect categories of stressful veterinarian-client interactions rather than examine every possible interaction, it seemed unlikely that recruitment of additional respondents or items would have substantially changed the scales developed. Nevertheless, burden transfer is unique for each veterinarian and is dictated by that individual's experiences. Therefore, we purposely included space at the bottom of the BTI survey for respondents to define and rate other experiences not specifically addressed by the BTI, and use of this scale does not preclude consideration of individual experiences within a clinical context. We believe that continued development and use of the BTI will facilitate the identification of other stressful client behaviors for consideration in burden transfer research. Another limitation was that, although a large number of veterinarians and pet owners participated in the psychometric validation portion (stages 2 and 3) of the present study, all surveys were completed online by a convenience sample of respondents. Consequently, it is possible the results were biased because the respondents were motivated to report their experiences for some reason. Also, the respondents of both the stage 2 and stage 3 surveys were primarily Caucasian females and lacked diversity. However, the demographics for the respondents of the present study were similar to those of other studies[11,12,14] regarding veterinarian-client interactions; therefore, we believe that the respondents of this study were representative of the intended populations. Even so, behaviors and interactions can be culturally influenced and affect veterinarian-client communication and patient health-care outcomes,[29] and cultural influences on veterinarian-client interactions warrant further investigation. Finally, the present study had a cross-sectional design, and although we found strong positive correlations between specific client behaviors and caregiver burden as well as veterinarian stress and burnout, the study design prohibited any conclusions regarding causality. Conceptually, it seems intuitive that caregiver burden would drive certain client behaviors that are stressful for veterinarians (ie, burden transfer), but further research is necessary to define the mechanism, or pathway, of burden transfer.

Elucidation of the burden transfer pathway will require a prospective study in which veterinary clients are assessed for caregiver burden over time and the veterinarians who provide service to those clients complete the BTI for the client participants in addition to measures of stress and burnout for themselves. It would also be beneficial to compare the BTI with a measure of compassion fatigue to further validate the findings of the present study. The BTI is a reflection of multiple variables, and results may differ depending on the practice type and setting (eg, small vs large animal practice, general vs specialty or emergency practice, and academic institution vs private practice) and background of the responding veterinarians and their clientele. Thus, those factors should be considered to further validate the BTI. Additional research is also necessary to assess how individual traits of veterinarians affect their reactions to specific client behaviors. Results of 1 study[30] indicate that neuroticism is a greater predictor of occupational stress for veterinarians than is work environment, suggesting an important role of personality as one such trait. Additionally, it has been suggested that an evidence-based approach is important for reducing occupational stress in veterinarians.[31] A mindfulness-based approach was attempted to decrease stress in veterinary students but had only limited success,[19] a finding that was consistent with results of meta-analyses[32,33] of mindfulness-based approaches in other populations. Results of the present study suggested that a targeted approach may be beneficial for alleviating veterinarian stress and burnout. The BTI developed and validated in this study provides a foundation for the development of an empirically testable, skills-based, educational approach to reduce the negative effects of client behaviors on veterinarians.

The purpose of the present study was to develop and validate a BTI, a new instrument to understand how client behaviors and interactions affect veterinarian stress and burnout. Results indicated that, for owners of dogs and cats with a chronic or terminal illness, there was a positive correlation between caregiver burden and the frequency with which those owners reported engaging in behaviors that veteri-

narians found stressful. Moreover, the frequency of stressful client behaviors and interactions was positively correlated with measures of veterinarian stress and burnout, which suggested burden transfer from pet owners to veterinarians. However, the reaction or extent to which veterinarians reported being bothered or upset by specific client behaviors was more robustly associated with veterinarian stress and burnout than was the frequency with which those behaviors occurred. Consequently, a skills-based approach to reduce veterinarian stress and burnout should include interventions designed to decrease the frequency of stressful veterinarian-client interactions and modify veterinarians' reactions to those interactions. For allied mental health professionals who work with veterinarians and veterinary students, the BTI may be a useful tool to help them better understand the specific stressors affecting an individual and how that individual reacts to those stressors, which in turn, may help guide treatment interventions.

Acknowledgments

No third-party funding or support was received in connection with this study or the writing or publication of the manuscript. The authors declare that there were no conflicts of interest.

Footnotes

a. SurveyGizmo, Boulder, Colo.
b. Facebook, Menlo Park, Calif.
c. Qualtrics, Provo, Utah.
d. SPSS, version 23.0, IBM Corp, Armonk, NY.

References

1. Bartram DJ, Baldwin DS. Veterinary surgeons and suicide: influences, opportunities, and research directions. *Vet Rec* 2008;162:36–40.
2. Brannick EM, DeWilde CA, Frey E, et al. Taking stock and making strides toward wellness in the veterinary workplace. *J Am Vet Med Assoc* 2015;247:739–742.
3. Cohen SP. Compassion fatigue and the veterinary health team. *Vet Clin North Am Small Anim Pract* 2007;37:123–134.
4. Fawcett A, Mullen S. Managing moral distress in practice. *In Pract* 2018;40:34–36.
5. Gardner DH, Rasmussen W. Workplace bullying and relationships with health and performance among a sample of New Zealand veterinarians. *N Z Vet J* 2018;66:57–63.
6. Huggard PK, Huggard EJ. When the caring gets tough: compassion fatigue and veterinary care. *VetScript* 2008;21:14–16.
7. Kahler SC. Moral stress the top trigger in veterinarians' compassion fatigue: veterinary social worker suggests redefining veterinarians' ethical responsibility. *J Am Vet Med Assoc* 2015;246:16–18.
8. Scotney RL, McLaughlin D, Keates HL. A systematic review of the effects of euthanasia and occupational stress in personnel working with animals in animal shelters, veterinary clinics, and biomedical research facilities. *J Am Vet Med Assoc* 2015;247:1121–1130.
9. Kipperman BS, Kass PH, Rishniw M. Factors that influence small animal veterinarians' opinions and actions regarding cost of care and effects of economic limitations on patient care and outcome and professional career satisfaction and burnout. *J Am Vet Med Assoc* 2017;250:785–794.
10. Vande Griek OH, Clark MA, Witte TK, et al. Development of a taxonomy of practice-related stressors experienced by veterinarians in the United States. *J Am Vet Med Assoc* 2018;252:227–233.
11. Nett RJ, Witte TK, Holzbauer SM, et al. Risk factors for suicide, attitudes toward mental illness, and practice-related stressors among US veterinarians. *J Am Vet Med Assoc* 2015;247:945–955.
12. Spitznagel MB, Jacobson DM, Cox MD, et al. Caregiver burden in owners of a sick companion animal: a cross-sectional observational study. *Vet Rec* 2017;181:321.
13. Tremont G, Davis JD, Spitznagel MB. Understanding and managing caregiver burden in cerebrovascular disease. In: Paul RH, Cohen R, Ott BR, et al, eds. *Vascular dementia: cerebrovascular mechanisms and clinical management*. Totowa, NJ: Humana Press, 2005;305–321.
14. Spitznagel MB, Cox MD, Jacobson DM, et al. Assessment of caregiver burden and associations with psychosocial function, veterinary service use, and factors related to treatment plan adherence among owners of dogs and cats. *J Am Vet Med Assoc* 2019;254:124–132.
15. Frostholm L, Fink P, Christensen KS, et al. The patients' illness perceptions and the use of primary health care. *Psychosom Med* 2005;67:997–1005.
16. Hilbert A, Martin A, Zech T, et al. Patients with medically unexplained symptoms and their significant others: illness attributions and behaviors as predictors of patient functioning over time. *J Psychosom Res* 2010;68:253–262.
17. Koh KB, Kim CH, Park JK. Predominance of anger in depressive disorders compared with anxiety disorders and somatoform disorders. *J Clin Psychiatry* 2002;63:486–492.
18. Bartram DJ, Sinclair JM, Baldwin DS. Interventions with potential to improve the mental health and wellbeing of UK veterinary surgeons. *Vet Rec* 2010;166:518–523.
19. Correia HM, Smith AD, Murray S, et al. The impact of a brief embedded mindfulness-based program for veterinary students. *J Vet Med Educ* 2017;44:125–133.
20. 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;245:513–524.
21. Noonan S. Mindfulness-based stress reduction. *Can Vet J* 2014;55:134–135.
22. Ben-Porath YS. Self-report inventories: assessing personality and psychopathology. In: Graham JR, Naglieri J, eds. *Handbook of psychology, assessment psychology.* Vol 10. 2nd ed. New York: Wiley, 2013;622–644.
23. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav* 1983;24:385–396.
24. Kristensen TS, Borritz M, Villadsen E, et al. The Copenhagen Burnout Inventory: a new tool for the assessment of burnout. *Work Stress* 2005;19:192–207.
25. Perera MJ, Brintz CE, Birnbaum-Weitzman O, et al. Factor structure of the Perceived Stress Scale-10 (PSS) across English and Spanish language responders in the HCHS/SOL sociocultural ancillary study. *Psychol Assess* 2017;29:320–328.
26. Zarit SH, Reever KE, Bach-Peterson J. Relatives of the impaired elderly: correlates of feelings of burden. *Gerontologist* 1980;20:649–655.
27. Spitznagel MB, Jacobson DM, Cox MD, et al. Predicting caregiver burden in general veterinary clients: contribution of companion animal clinical signs and problem behaviors. *Vet J* 2018;236:23–30.
28. Sin NL, Sloan RP, McKinley PS, et al. Linking daily stress processes and laboratory-based heart rate variability in a national sample of midlife and older adults. *Psychosom Med* 2016;78:573–582.
29. Mills JN, Volet S, Fozdar F. Cultural awareness in veterinary practice: student perceptions. *J Vet Med Educ* 2011;38:288–297.
30. Dawson BF, Thompson NJ. The effect of personality of occupational stress in veterinary surgeons. *J Vet Med Educ* 2017;44:72–83.
31. Kim RW, Patterson G, Nahar VK, et al. Toward an evidence-based approach to stress management for veterinarians and veterinary students. *J Am Vet Med Assoc* 2017;251:1002–1004.
32. Khoury B, Lecomte T, Fortin G, et al. Mindfulness-based therapy: a comprehensive meta-analysis. *Clin Psychol Rev* 2013;33:763–771.
33. Kreplin U, Farias M, Brazil IA. The limited prosocial effects of meditation: a systematic review and meta-analysis. *Sci Rep* 2018;8:2403.