

Changes in Affective and Cognitive Empathy among Veterinary Practitioners

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ABSTRACT

Clinical empathy is a multi-dimensional concept characterized by four dimensions: (1) affective—the ability to experience patients' or clients' emotions and perspectives, (2) moral—the internal motivation to empathize, (3) cognitive—the intellectual ability to identify and comprehend others' perspective and emotions, and (4) behavioral—the ability to convey understanding of those emotions and perspectives back to the patient or client. The Davis Interpersonal Reactivity Index (IRI) was used to examine the affective and cognitive facets of empathy in veterinary practitioners. The IRI consists of four subscales that measure cognitive (perspective taking and fantasy) and affective (empathic concern and personal distress) components of empathy. Data from a cross-sectional sample of practicing veterinarians ($n = 434$) were collected. Veterinarians' fantasy scores were lowest for those with the most clinical experience. Personal distress scores were highest among new veterinarians and lowest for those with 26 or more years in practice. High levels of personal distress in the early years of practice are concerning for the professional wellness of veterinarians. To combat this trend, the implementation of resilience-building interventions should be considered to support veterinary practitioners.

Key words: empathy, professional wellness, veterinarians, cross-sectional, Davis Interpersonal Reactivity Index

INTRODUCTION

Observed declines in student well-being associated with progression through the veterinary curriculum have been well documented,¹⁻⁸ yet relatively little information is available on how new veterinarians cope with entry into practice. A recent study⁹ found that 1 in every 6 veterinarians experiences suicidal ideation, and 1 in every 11 experiences severe psychological distress. The prevalence of poor psychological health was greatest among veterinarians with less than 5 years in practice.⁹ Extrapolating from literature in medicine,¹⁰ veterinarian stress, depression, and anxiety may be related to declines in empathy toward clients, patients, and colleagues.

What is Empathy?

Empathy is a multi-dimensional concept characterized by four dimensions in the clinical setting¹¹⁻¹³: (1) affective—the ability to experience patients' or clients' emotions and perspectives, (2) moral—the internal motivation to empathize, (3) cognitive—the intellectual ability to identify and comprehend others' perspective and emotions, and (4) behavioral—the ability to convey understanding of those emotions and perspectives back to the patient or client. In this study, the Davis Interpersonal Reactivity Index (IRI)^{14,15} was used to examine affective and cognitive aspects of empathy in veterinary practitioners.

Relationship between Empathy and Patient and Client Outcomes

Expressions of physician empathy influence clinical outcomes for patients, including greater patient satisfaction,¹⁶⁻¹⁸ regulation of patient symptoms,¹⁹ and compliance with medical recommendations.²⁰ Physician empathy is a critical data gathering skill, as empathic clinicians elicit more data from patients.²¹ In veterinary medicine, empathy toward clients is associated with enhanced adherence²² and greater client satisfaction.²³

Relationship between Empathy and Physician and Veterinarian Outcomes

There are substantial data available on physicians' self-reported feelings of empathy.²⁴⁻³⁵ Physicians' professional wellness is correlated with decreases in empathy.^{32,36,37} There is a close association between decreased empathy and lack of sleep,³⁶ decreased overall well-being,³⁷ and mood disturbances.³² These studies suggest that physicians are less likely to demonstrate care and concern for others when they themselves are not in optimal physical and mental health. Of even more concern for patient well-being is the association between decreases in empathy and increased odds of a self-perceived medical error, which can have deleterious effects on patient care.³⁴ Neumann et al.²⁴ postulated that the observed declines in

self-perceived measures of cognitive and affective empathy for physicians in training are specifically linked to the clinical practice phase, and “particularly as a result of increased contact with patients.”^{24(p.998)} Similarly, in veterinary medicine, higher levels of empathic concern are related to veterinarians’ own satisfaction with client interactions during health-related appointments.³⁸

Declining Empathy in Physicians as Measured by the IRI

Declines in physicians’ empathy with advanced clinical training are well described in the literature. In a longitudinal study, Bellini and colleagues³² found that after the first 5 months of an internship, personal distress scores (a negative measure of empathy) increased while empathic concern decreased. The interns’ feelings of distress might have impeded their ability to relate to their patients’ feelings. In a follow-up study³³ of the same participants, the empathic concern scores remained low during residency training and did not return to baseline levels. In contrast, personal distress scores peaked in the middle of internship training, and then dropped to baseline level at the end of their residency training. The authors attributed this improvement to residents’ increased confidence in facing emergencies, which was an expected outcome of the training program.

Declining Empathy in Veterinary Students as Measured by the IRI

Empathy levels among veterinary students in the didactic portion of a DVM program (years 1–3) were previously reported,³⁹ with a decline in students’ perspective taking scores between second and third year, and an increase in personal distress between first and third year. These changes corresponded to a transition in the curriculum from didactic courses to part-time clinical rotations, when students begin assuming limited responsibility for client contact and patient care. In the next phase of the study (unpublished data), these trends continued through the clinical curriculum and fourth year of veterinary school with increases in personal distress, declines in fantasy, and maintenance of empathic concern and perspective taking.

These previous findings generated the following research question: How are levels of empathy related to years of clinical experience for practicing veterinarians? The purpose of this study was to assess empathy levels among veterinary practitioners in relation to years of clinical experience. As far as the authors are aware, little has been published about empathy in veterinary practitioners.^{23,40}

HYPOTHESIS

Self-reported levels of empathy will be lower among more experienced veterinary practitioners than early-career veterinarians, replicating the pattern reported in physicians. Specifically, this will manifest as lower scores on IRI positive empathy measures of empathic concern, fantasy scale, and perspective taking, and as higher scores on the negative empathy measure of personal distress.

MATERIALS AND METHODS

Study Design

The cross-sectional study was conducted using the IRI^{14,15} to measure self-reported levels of empathy among veterinary practitioners in Colorado and North Carolina. The IRI was administered online and all submissions were anonymous. This study received IRB approval for use of human subjects from North Carolina State University.

Participants

Emails were distributed to practicing veterinarians in Colorado and North Carolina via membership listservs by their respective state veterinary medical associations. The email invitations contained a brief description of the study, and a link to the online survey. Background demographic information was collected, including gender, age, type of practice, and clinical experience. Participating veterinarians were grouped into experience categories: less than 5 years, 6–10 years, 11–15 years, 16–20 years, 21–25 years, and 26 or more years.

IRI

Due to its broad conceptualization of empathy, the IRI^{14,15} was used to examine affective and cognitive aspects of empathy in veterinary practitioners. The IRI consists of four subscales that measure cognitive (perspective taking and fantasy) and affective (empathic concern and personal distress) components of empathy. The perspective taking component evaluates a person’s tendency to spontaneously adopt the psychological point of view of others, and fantasy assesses participants’ tendency to transpose themselves into the feelings and actions of fictitious characters. Empathic concern assesses “other-oriented” feelings of sympathy and concern for unfortunate others, while personal distress measures participants’ “self-oriented” feelings of personal anxiety and unease in tense interpersonal settings.

The following are example items for each of the four subscales:

- Empathic concern: I often have tender, concerned feelings for people less fortunate than me.
- Fantasy: I daydream and fantasize, with some regularity, about things that might happen to me.
- Personal distress: Being in a tense emotional situation scares me.
- Perspective taking: I sometimes try to understand my friends better by imagining how things look from their perspective.

The subscale score is calculated by summing the participants’ responses to the seven specific items in each category. The IRI was previously validated for use with veterinary students³⁹ and has been used extensively in the medical field with both students and physicians.^{31–35,41,42} Schoenfeld-Tacher et al.³⁹ used a Rasch model to validate the instrument with veterinary students and found reliability ranging from .79 to .82 for each of the scales, supporting its use with veterinary student populations. Davis’ original study showed internal reliabilities ranging from .71 to .77.

Table 1: Demographic composition of practitioner sample, showing breakdown of age and experience by gender

Variable		Total	Male <i>n</i> (%)	Female <i>n</i> (%)	Unspecified gender
Age	All respondents	434	133 (30.6)	299 (68.9)	2 (0.5)
	20–29	39	5 (12.8)	34 (87.2)	–
	30–39	108	11 (10.2)	96 (88.8)	1 (1)
	40–49	105	20 (19.0)	85 (81.0)	–
	50–59	110	47 (42.7)	63 (57.3)	–
	60–69	55	35 (63.6)	19 (34.5)	1 (1.8)
	70+	15	14 (93.3)	1 (6.7)	–
	Unspecified age	2	1 (50)	1 (50)	–
Years in practice	0–5	98	8 (8.2)	89 (90.8)	1 (1)
	6–10	50	7 (14.0)	43 (86.0)	–
	11–15	62	13 (21.0)	49 (79.0)	–
	16–20	46	9 (19.6)	37 (80.4)	–
	21–25	46	14 (30.4)	32 (69.6)	–
	26+	131	82 (62.6)	48 (36.6)	1 (0.8)
	Unspecified experience	1	–	1 (100)	–

Note: Not all participants reported all variables.

STATISTICAL ANALYSES

Descriptive and inferential statistics were performed using SPSS for Windows version 22 (IBM Corp., Armonk, NY). A *p* value of .05 was selected as the cut-off for statistical significance. Less than 3% of questions (14/434) were skipped by participants, and the missing values were handled by excluding the specific subscale from analysis for that participant, using the listwise exclusion option in SPSS. This resulted in a total of 420–426 responses for each subscale.

The cross-sectional data from each group of practitioners (NC and CO) were first evaluated for normality using the Shapiro–Wilk test. Since the samples were not normally distributed, a Mann–Whitney *U* test was used to assess differences in each of the IRI subscales based on state of membership. There were no significant differences, so the null hypothesis was retained and the data from both practitioner groups combined to create a larger sample (*n* = 434) for further analysis.

An independent-samples Kruskal–Wallis test was used to examine differences in IRI scores based on years of clinical experience. Post hoc pairwise comparisons were performed to examine for significant differences between categories. Significance levels for pairwise comparisons were automatically adjusted in SPSS (*p* = .05) to account for the number of tests performed.

RESULTS

Response Rates

A total of 190 participants responded to the Colorado Veterinary Medical Association (CVMA) and 244 participants to the North Carolina State Veterinary Medical Association (NCVMA) survey invitation, resulting in 434 responses. The CVMA email invitation was sent out to

participants three times. The total number of registered email addresses available varied from 1,184 to 1,207.⁴³ However, it is important to note that this list includes a small number of non-DVM members who would not be expected to respond to a survey targeting practicing DVMs, and not all CVMA members chose to provide an email address. The estimated response rate was 16% (190/1,207). There are 2,310 active NCVMA members, and participants are allowed to opt out of email communications.⁴⁴ The estimated response rate was 10.5% (244/2,310).

Veterinary Practitioner Demographic Data

Table 1 illustrates the age, gender, and years of clinical experience of the combined sample. The majority of participants (336/434, 77.4%) were small-animal practitioners. As expected, participants' age and years of clinical experience were positively correlated (*r* = .864, *n* = 431, *p* < .001), with older practitioners having more years of clinical experience.

IRI

Reliability estimates (Cronbach's α) for this sample of veterinary practitioners were as follows: empathic concern = .78, fantasy = .82, personal distress = .78, and perspective taking = .82. Table 2 presents detailed data on IRI subscale scores by years of clinical experience. Table 3 shows the calculated ranks for the Kruskal–Wallis test.

Cognitive Domain

There were no significant differences in perspective taking scores among veterinary practitioners based on years of clinical experience.

A Kruskal–Wallis *H* test showed that the decline in practitioner mean scores for fantasy was significant

Table 2: Cross-sectional comparison of IRI scores for veterinary practitioners based on years in practice

Years in practice	IRI scores															
	EC				FS*				PD*				PT			
	n	Mean	SD	Range	n	Mean	SD	Range	n	Mean	SD	Range	n	Mean	SD	Range
0–5	97	19.84	4.586	10–28	94	16.48	5.616	0–28	96	10.32	4.763	0–21	97	17.84	5.018	5–27
6–10	50	20.16	4.999	9–28	47	16.11	5.994	3–28	49	9.88	4.807	0–19	49	17.61	4.353	8–25
11–15	60	19.53	4.608	7–28	61	14.00	7.010	0–28	61	8.28	5.490	0–23	60	19.07	4.960	6–28
16–20	46	20.74	3.702	13–27	45	15.27	5.479	4–26	44	7.80	4.738	0–18	46	18.37	4.654	8–28
21–25	45	20.56	4.071	10–27	45	15.38	6.001	1–27	45	6.84	4.117	0–16	45	18.96	4.651	10–28
26+	128	20.77	4.085	10–28	128	12.92	5.349	0–26	128	7.31	4.197	0–19	125	18.82	4.429	8–28
Total	426	20.28	4.354	7–28	420	14.75	5.970	0–28	423	8.43	4.809	0–23	422	18.45	4.690	5–28

EC = empathic concern; FS = fantasy; PD = personal distress; PT = perspective taking

* $p < .001$

Table 3: Ranks generated for Kruskal–Wallis test

Years in practice	EC		FS*		PD*		PT	
	n	Mean rank	n	Mean rank	n	Mean rank	n	Mean rank
0–5	97	202.64	94	248.75	96	259.96	97	198.92
6–10	50	210.89	47	237.29	49	248.09	49	191.53
11–15	60	190.94	61	197.91	61	204.20	60	229.08
16–20	46	226.72	45	217.23	44	196.82	46	204.23
21–25	45	220.99	45	222.51	45	173.09	45	221.24
26+	128	225.94	128	171.98	128	184.83	125	219.82
Total	426		420		423		422	

EC = empathic concern; FS = fantasy; PD = personal distress; PT = perspective taking

* $p < .001$

($\chi^2[5] = 25.810$, $p < .001$). The significant differences were between practitioners with 26 or more years' experience (mean rank = 171.98) compared to those with 0–5 years in practice (mean rank = 248.75, $p < .001$) and those with 6–10 years in practice (mean rank = 237.29, $p = .024$).

Affective Domain

Personal distress scores were highest for new veterinarians, and showed significant decreases with increasing years of clinical experience ($\chi^2[5] = 30.972$, $p < .001$). Comparisons revealed that scores for practitioners with 26 or more years of experience (mean rank = 184.83) were different from those of DVM's with 0–5 years (mean rank = 259.66, $p < .001$) and 6–10 years (mean rank = 248.09, $p = .030$). Veterinarians with 21–25 years of clinical experience also had significantly lower levels of personal distress (mean rank = 173.09) than those with 0–5 years (mean rank = 259.66, $p = .001$) and 6–10 years (mean rank = 248.09, $p = .044$).

Scores for empathic concern were similar across all groups of practitioners and there were no significant differences in scores among practitioners with varying degrees of clinical experience.

DISCUSSION

The aim of this study was to assess empathy levels among veterinary practitioners in relation to years of clinical experience. This study follows upon prior research investigating changes in empathy levels among veterinary students advancing through the DVM program.³⁹ There was a decline in students' perspective taking scores between second and third year and an increase in personal distress between the first and third year. In the next phase of the study, these trends continued through the clinical curriculum and fourth year of veterinary school (unpublished data) with increases in personal distress, declines in fantasy, and sustained levels of empathic concern and perspective taking.

The present study found personal distress scores, which are a negative indicator of empathy, to be highest among new practitioners (0–5 and 6–10 years in practice) as compared to their counterparts with 21–25 and 26+ years of clinical experience. Based on the results, which include different student and practitioner populations, it appears that personal distress scores increase through veterinary school and are at the greatest level during the early years in practice. Practitioners with more clinical experience

report less personal distress. For students, scores on the fantasy subscale declined through veterinary school. Among DVM's, fantasy scores are at the lowest level among veterinary practitioners with greater clinical experience.

Cognitive Elements of Empathy

Perspective Taking

Perspective taking is an individual's capacity to understand another person's viewpoint, and spontaneously adopt the point of view of the other person, instead of solely focusing on themselves. Perspective taking scores are positively correlated with social functioning and self-esteem.¹⁵ In this study, there were no significant differences in veterinary practitioners' perspective taking scores based on years of clinical experience.

These findings are supported by similar studies in medical education using the IRI. During internship and residency programs, Bellini^{32,33} did not observe changes in perspective taking. What is worrisome is that high perspective taking scores are associated with increased well-being for physicians in training.³⁷

Fantasy

The fantasy scale measures respondents' tendency to transpose themselves into fictional settings. In this study, fantasy scores were lowest for veterinary practitioners with the greatest clinical experience.

Because fantasy subscale results are not directly associated with clinical skills used during a medical encounter, they are rarely reported in studies of physicians, so there is a limited basis for comparison. A plausible explanation for the observed differences can be found in Handford's⁴² study, which documented an inverse relationship between fantasy scores and age for medical students, doctors, and the control group. Given the strong correlation ($r = .864$) between age and clinical experience in veterinarians, it is likely that maturation influenced the low fantasy scores. One concern is that these declines in fantasy scores may represent a diminished ability for veterinarians to escape into art, literature, movies, theater, or music, all of which could potentially be adaptive ways of coping with professional stressors.

Affective Measures of Empathy

Personal Distress

Personal distress is a measure of participants' self-oriented feelings of anxiety and unease in interpersonal settings. On the personal distress scale, higher scores correspond to greater levels of distress and have been shown to correlate with increased social dysfunction and decreased social competence.¹⁵ In this study, personal distress scores were highest among early-career veterinary practitioners with 0–5 years of clinical experience. These scores were lower in more experienced veterinary practitioners.

There are various potential explanations for this observation. Personal distress has been shown to decrease with age and clinical experience for medical students and physicians.⁴² In a cross-sectional study, Handford et al. noticed a progressive decrease in personal distress scores

with increasing levels of medical training and practice, as well as with age alone in a control group.⁴² They hypothesized that this decrease might be due to the coping mechanisms developed by older doctors in response to ongoing stressors, but the study design made it impossible to state with certainty.

Personal distress is inversely related to overall health and well-being in medical interns,³² and peaks during the internship year, before returning to baseline during residency.³³ These findings match the observed trends in veterinary students and practitioners, with personal distress at its highest when students begin providing direct patient care.³⁹ The initial years of veterinary practice can be seen as similar to residency programs in human medicine, especially for veterinarians who begin unsupervised practice immediately after graduation.

Stratton³¹ suggested that increased personal distress might be associated with increased responsibility and workload, as well as discomfort providing care to ill patients. Nett et al.⁹ found that veterinarians practicing for less than 20 years had a higher prevalence of serious psychological distress. The transition from veterinary school to clinical practice can be difficult, and lack of social support and increased social isolation play large roles in this challenge.⁹ These two factors are greatest among early-career veterinary practitioners, who usually have limited flexibility and autonomy and increased time commitments in their jobs.⁴⁵ Most new veterinarians work as associates in someone else's practice, and are typically responsible for taking emergency calls after hours,⁴⁵ making it challenging to engage in social and/or wellness-related activities.⁹

A direct implication of these findings is how new graduates cope with personal distress and its impact on overall mental health and occupational stress.^{9,46} Given the research evidence on anxiety, depression, and suicidal ideation in veterinary students and veterinarians,^{1–9,46–48} it is reasonable to generalize that personal distress may be inversely related to veterinary student and practitioner well-being.

Brannick et al.⁴⁷ cited examples of wellness programs used in health care settings to help providers develop positive coping strategies for stressful work environments. Veterinarians as a group appear to be highly skeptical about the value of treatment for mental illnesses.⁹ As such, questions remain of whether veterinarians would access these resources and whether offerings during veterinary school could overcome the stigma around seeking support. Another challenge is seeking funding for these programs⁴⁷ to cover the costs of providing mental health experts on-site in veterinary schools and associations.

Empathic Concern

The empathic concern scale assesses other-oriented feelings of concern for unfortunate others.¹⁵ There were no significant differences based on veterinary practitioners' amount of clinical experience. This finding differs from the trends observed among physicians,⁴² whose empathic concern changes with clinical experience.³³ Veterinarians' empathic concern scores are comparable to medical students' and lower than practicing doctors and older controls.⁴² Further research is necessary to explore the causes

of this discrepancy, and whether it may be associated with factors that influence career choices between human and veterinary medicine.

IMPLICATIONS FOR THE VETERINARY PROFESSION

Cake et al.⁴⁹ created a veterinary model of work-derived well-being from living a life that is engaging, meaningful, and deeply fulfilling. Empathy is a critical construct in two of the model components—helping people and belonging—which contribute to meaning and social connectedness as precursors to veterinarian well-being. Veterinarians can derive meaning from helping clients, contributing to society, and being part of a caregiving team. Underlying these interactions is empathic concern and perspective taking, both of which are essential in building trusting relationships with clients and colleagues.

The overall trends in personal distress scores highlight a critical need to provide mental health support and to promote resilience and coping mechanisms among veterinary students and new graduates. Interventions that improve veterinary students' and practitioners' overall mental health and well-being might translate into improved empathy. Creation of support groups^{46,47} for early-career practitioners could help build personal and professional resilience, which enables them to meet the needs of their clients and patients. More specifically, the Balint group technique,^{50–52} which is used to help doctors focus on the clinician–patient relationship, may be adapted to foster veterinarian empathy. Another resource is Finding Meaning in Veterinary Medicine groups,⁵³ which create a community of inquiry, sharing, discovery, and support for practicing physicians. By receiving care themselves in these settings, new graduates might be in a stronger position to care for others.

STRENGTHS AND LIMITATIONS

The response rates of veterinary practitioners in Colorado and North Carolina were commensurate with other, non-incentivized online surveys of this nature.⁵⁴ The low response rates (16% for CVMA members and 10.5% for NCVMA members) enhance the potential for self-selection bias. Veterinarians with certain characteristics (e.g., coping skills, stress management, or professional wellness) may have been attracted to the study or not responded at all.

Cross-sectional data collection did not allow us to track changes in individual veterinarian's scores over time. A longitudinal study design is necessary to capture these changes; however, the cross-sectional design provided an initial description of veterinary empathy levels based on years of clinical experience.

The directional relationship between empathy and veterinary professional wellness is unclear. For instance, veterinarians under great personal distress may not be able to empathize with their clients. On the other hand, veterinarians with low empathy may feel distressed because empathy is a critical component of helping people and belonging,⁴⁹ both components of meaningful work for veterinarians.

The demographic distribution of practitioner respondents is similar to the profile of currently employed veterinarians responding to a national study,⁹ and reflects the major gender shift in the veterinary profession. Women became the majority of graduates from DVM programs in 1987,⁵⁵ and 79.6% of new DVMs in 2015 were female. The practitioner sample reflected these trends, with the majority of early-career practitioners being female, while late-career practitioners were predominantly male. However, it is also plausible that veterinarians with high levels of personal distress may have self-selected out of the veterinary profession or clinical practice over time. Thus, the results must be interpreted with caution.

The number of years of clinical experience was directly related to participants' age, making it difficult to discern whether differences in practitioners' reported levels of empathy are due to experience, age, attrition from the profession, or generational differences. Nett et al.⁹ described a cohort effect due to greater stressors encountered by younger veterinarians, who currently face changing selection criteria for entry to the profession and increased competition and educational costs. This may lead to increased psychological vulnerability for early-career veterinarians than for their predecessors. This present study described existing differences in observed empathy scores and did not attempt to predict causal demographic factors influencing empathy or model future trends.

The IRI measures self-reported cognitive and affective domains of empathy, so it is unknown if or how it translates into practitioners' behavioral expression of empathy. In a 2004 study of veterinarian interactions, practicing veterinarians expressed empathy in only 7% of appointments.⁴⁰ In a 2013 study, empathy was expressed in 41% of appointments with less than one empathy statement per appointment.²³ The review articles in the human medical field^{24,35} report weak associations between self-reported empathy scores and ratings of residents' expressions of empathy.

FUTURE DIRECTIONS

Given the concerning findings of increased personal distress during the early phases of veterinary experience, it would be informative to track a cohort of veterinarians longitudinally through their first 25 years in practice, despite the challenging, resource-intensive, and impractical implications of this type of study. It would be helpful to validate these findings with additional measures of veterinarian empathy, including behavioral manifestations and comparative research of other professionals within and outside the health care arena. Taken together, both types of studies could provide insights into whether differences in empathy levels are attributed to experience or maturation, innate personality characteristics, chosen career path, or professional stressors.

Most medical studies of empathy rely on self-reported measures.⁵⁶ Therefore, a critical research question that remains is whether affective and/or cognitive empathy is associated with behavioral expressions of empathy, leading to meaningful clinical outcomes for veterinary practices, veterinarians, clients, and patients. The next

step in empathy research in veterinary medicine is to include a behavioral measure of empathy^{23,40} alongside a self-reported measure and assess their relationship with clinical outcomes.

To address the current challenges of professional wellness, interventional study designs can assess the impact of wellness programs on veterinary practitioner empathy and well-being. It is vital to identify risk factors that contribute to decreased empathy and well-being, and to assess the efficacy of wellness programs.

CONCLUSION

The salient finding of this study is that personal distress scores are highest for early-career veterinarians. The high levels of personal distress during the early years are concerning for the well-being of new graduates, who may require additional support in the first 5 years of practice. Another study indicated that early-career veterinarians are more vulnerable to mental distress than experienced veterinarians, and this trend needs to be reversed to ensure the well-being of the profession.⁹ Empathy is crucial for success in practice, as it allows a veterinarian to step into a client or colleague's shoes, which is a key step in building rapport and trust with clients and within veterinary teams. The abilities to help others and belong to a professional community are integral to meaningful work in veterinary medicine.⁴⁹

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REFERENCES

- Gardner DH, Parkinson TJ. Optimism, self-esteem, and social support as mediators of the relationships among workload, stress, and well-being in veterinary students. *J Vet Med Educ*. 2011;38(1):60–6. Medline:21805936 <http://dx.doi.org/10.3138/jvme.38.1.60>.
- Hafen M Jr, Reisbig AM, White MB, et al. Predictors of depression and anxiety in first-year veterinary students: a preliminary report. *J Vet Med Educ*. 2006;33(3):432–40. Medline:17035221 <http://dx.doi.org/10.3138/jvme.33.3.432>.
- Hafen M Jr, Reisbig AM, White MB, et al. The first-year veterinary student and mental health: the role of common stressors. *J Vet Med Educ*. 2008;35(1):102–9. Medline:18339964 <http://dx.doi.org/10.3138/jvme.35.1.102>.
- Hafen M Jr, Ratcliffe GC, Rush BR. Veterinary medical student well-being: depression, stress, and personal relationships. *J Vet Med Educ*. 2013;40(3):296–302. Medline:23975073 <http://dx.doi.org/10.3138/jvme.1112-101R>.
- Kogan LR, McConnell SL, Schoenfeld-Tacher R. Veterinary students and non-academic stressors. *J Vet Med Educ*. 2005;32(2):193–200. Medline:16078171 <http://dx.doi.org/10.3138/jvme.32.2.193>.
- Siqueira Drake AA, Hafen M Jr, Rush BR, et al. Predictors of anxiety and depression in veterinary medicine students: a four-year cohort examination. *J Vet Med Educ*. 2012;39(4):322–30. Medline:23187025 <http://dx.doi.org/10.3138/jvme.0112-006R>.
- Strand EB, Zaparanick TL, Brace JJ. Quality of life and stress factors for veterinary medical students. *J Vet Med Educ*. 2005;32(2):182–92. Medline:16078170 <http://dx.doi.org/10.3138/jvme.32.2.182>.
- Zenner D, Burns GA, Ruby KL, et al. Veterinary students as elite performers: preliminary insights. *J Vet Med Educ*. 2005;32(2):242–8. Medline:16078178 <http://dx.doi.org/10.3138/jvme.32.2.242>.
- 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(8):945–55. Medline:26421408 <http://dx.doi.org/10.2460/javma.247.8.945>.
- Neumann M, Bensing J, Mercer S, et al. Analyzing the “nature” and “specific effectiveness” of clinical empathy: a theoretical overview and contribution towards a theory-based research agenda. *Patient Educ Couns*. 2009;74(3):339–46. Medline:19124216 <http://dx.doi.org/10.1016/j.pec.2008.11.013>.
- Morse JM, Anderson G, Bottorff JL, et al. Exploring empathy: a conceptual fit for nursing practice? *Image J Nurs Sch*. 1992;24(4):273–80. Medline:1452181 <http://dx.doi.org/10.1111/j.1547-5069.1992.tb00733.x>.
- Stepien KA, Baernstein A. Educating for empathy. *J Gen Intern Med*. 2006;21(5):524–30. Medline:16704404 <http://dx.doi.org/10.1111/j.1525-1497.2006.00443.x>.
- Reniers RL, Corcoran R, Drake R, et al. The QCAE: a questionnaire of cognitive and affective empathy. *J Pers Assess*. 2011;93(1):84–95. Medline:21184334 <http://dx.doi.org/10.1080/00223891.2010.528484>.
- Davis M. A multidimensional approach to individual differences in empathy. *Catal Sel Doc Psychol*. 1980;10:85.
- Davis MH. Measuring individual differences in empathy: evidence for a multidimensional approach. *J Pers Soc Psychol*. 1983;44(1):113–26. <http://dx.doi.org/10.1037/0022-3514.44.1.113>.
- Ong LM, Visser MR, Lammes FB, et al. Doctor–patient communication and cancer patients' quality of life and satisfaction. *Patient Educ Couns*. 2000;41(2):145–56. Medline:12024540 [http://dx.doi.org/10.1016/S0738-3991\(99\)00108-1](http://dx.doi.org/10.1016/S0738-3991(99)00108-1).
- Graugaard PK, Holgersen K, Finset A. Communicating with alexithymic and non-alexithymic patients: an experimental study of the effect of psychosocial communication and empathy on patient satisfaction. *Psychother Psychosom*. 2004;73(2):92–100. Medline:14767151 <http://dx.doi.org/10.1159/000075540>.
- Goodchild CE, Skinner TC, Parkin T. The value of empathy in dietetic consultations. A pilot study to investigate its effect on satisfaction, autonomy and agreement. *J Hum Nutr Diet*. 2005;18(3):181–5. Medline:15882380 <http://dx.doi.org/10.1111/j.1365-277X.2005.00606.x>.

- 19 Bertakis KD, Roter D, Putnam SM. The relationship of physician medical interview style to patient satisfaction. *J Fam Pract.* 1991;32(2):175–81. Medline:1990046
- 20 Stewart MA. Effective physician–patient communication and health outcomes: a review. *CMAJ.* 1995;152(9):1423–33. Medline:7728691
- 21 Maguire P, Faulkner A, Booth K, et al. Helping cancer patients disclose their concerns. *Eur J Cancer.* 1996;32(1):78–81. Medline:8695247 [http://dx.doi.org/10.1016/0959-8049\(95\)00527-7](http://dx.doi.org/10.1016/0959-8049(95)00527-7).
- 22 Kanji N, Coe JB, Adams CL, et al. Effect of veterinarian–client–patient interactions on client adherence to dentistry and surgery recommendations in companion-animal practice. *J Am Vet Med Assoc.* 2012;240(4):427–36. Medline:22309015 <http://dx.doi.org/10.2460/javma.240.4.427>.
- 23 McArthur ML, Fitzgerald JR. Companion animal veterinarians’ use of clinical communication skills. *Aust Vet J.* 2013;91(9):374–80. Medline:23980830 <http://dx.doi.org/10.1111/avj.12083>.
- 24 Neumann M, Edelhäuser F, Tauschel D, et al. Empathy decline and its reasons: a systematic review of studies with medical students and residents. *Acad Med.* 2011;86(8):996–1009. Medline:21670661 <http://dx.doi.org/10.1097/ACM.0b013e318221e615>.
- 25 Colliver JA, Conlee MJ, Verhulst SJ, et al. Reports of the decline of empathy during medical education are greatly exaggerated: a reexamination of the research. *Acad Med.* 2010;85(4):588–93. Medline:20354372 <http://dx.doi.org/10.1097/ACM.0b013e3181d281dc>.
- 26 Quince TA, Parker RA, Wood DF, et al. Stability of empathy among undergraduate medical students: a longitudinal study at one UK medical school. *BMC Med Educ.* 2011;11(1):90. Medline:22026992 <http://dx.doi.org/10.1186/1472-6920-11-90>.
- 27 Chen D, Lew R, Hershman W, et al. A cross-sectional measurement of medical student empathy. *J Gen Intern Med.* 2007;22(10):1434–8. Medline:17653807 <http://dx.doi.org/10.1007/s11606-007-0298-x>.
- 28 Hojat M, Mangione S, Nasca TJ, et al. An empirical study of decline in empathy in medical school. *Med Educ.* 2004;38(9):934–41. Medline:15327674 <http://dx.doi.org/10.1111/j.1365-2929.2004.01911.x>.
- 29 Hojat M, Vergare MJ, Maxwell K, et al. The devil is in the third year: a longitudinal study of erosion of empathy in medical school. *Acad Med.* 2009;84(9):1182–91. Medline:19707055 <http://dx.doi.org/10.1097/ACM.0b013e3181b17e55>.
- 30 Newton BW, Barber L, Clardy J, et al. Is there hardening of the heart during medical school? *Acad Med.* 2008;83(3):244–9. Medline:18316868 <http://dx.doi.org/10.1097/ACM.0b013e3181637837>.
- 31 Stratton TD, Saunders JA, Elam CL. Changes in medical students’ emotional intelligence: an exploratory study. *Teach Learn Med.* 2008;20(3):279–84. Medline:18615305 <http://dx.doi.org/10.1080/10401330802199625>.
- 32 Bellini LM, Baime M, Shea JA. Variation of mood and empathy during internship. *JAMA.* 2002;287(23):3143–6. Medline:12069680 <http://dx.doi.org/10.1001/jama.287.23.3143>.
- 33 Bellini LM, Shea JA. Mood change and empathy decline persist during three years of internal medicine training. *Acad Med.* 2005;80(2):164–7. Medline:15671323 <http://dx.doi.org/10.1097/00001888-200502000-00013>.
- 34 West CP, Huschka MM, Novotny PJ, et al. Association of perceived medical errors with resident distress and empathy: a prospective longitudinal study. *JAMA.* 2006;296(9):1071–8. Medline:16954486 <http://dx.doi.org/10.1001/jama.296.9.1071>.
- 35 West CP, Huntington JL, Huschka MM, et al. A prospective study of the relationship between medical knowledge and professionalism among internal medicine residents. *Acad Med.* 2007;82(6):587–92. Medline:17525546 <http://dx.doi.org/10.1097/ACM.0b013e3180555fc5>.
- 36 Rosen IM, Gimotty PA, Shea JA, et al. Evolution of sleep quantity, sleep deprivation, mood disturbances, empathy, and burnout among interns. *Acad Med.* 2006;81(1):82–5. Medline:16377826 <http://dx.doi.org/10.1097/00001888-200601000-00020>.
- 37 Shanafelt TD, West C, Zhao X, et al. Relationship between increased personal well-being and enhanced empathy among internal medicine residents. *J Gen Intern Med.* 2005;20(7):559–64. Medline:16050855 <http://dx.doi.org/10.1007/s11606-005-0102-8>.
- 38 Shaw JR, Adams CL, Bonnett BN, et al. Veterinarian satisfaction with companion animal visits. *J Am Vet Med Assoc.* 2012;240(7):832–41. Medline:22443436 <http://dx.doi.org/10.2460/javma.240.7.832>.
- 39 Schoenfeld-Tacher RM, Kogan LR, Meyer-Parsons B, et al. Educational research report: changes in students’ levels of empathy during the didactic portion of a veterinary program. *J Vet Med Educ.* 2015;42(3):194–205. Medline:26075622 <http://dx.doi.org/10.3138/jvme.0115-007R>.
- 40 Shaw JR, Adams CL, Bonnett BN, et al. Use of the roter interaction analysis system to analyze veterinarian–client–patient communication in companion animal practice. *J Am Vet Med Assoc.* 2004;225(2):222–9. Medline:15323378 <http://dx.doi.org/10.2460/javma.2004.225.222>.
- 41 Thomas MR, Dyrbye LN, Huntington JL, et al. How do distress and well-being relate to medical student empathy? A multicenter study. *J Gen Intern Med.* 2007;22(2):177–83. Medline:17356983 <http://dx.doi.org/10.1007/s11606-006-0039-6>.
- 42 Handford C, Lemon J, Grimm MC, et al. Empathy as a function of clinical exposure—reading emotion in the eyes. *PLoS One.* 2013;8(6):e65159. Medline:23755185 <http://dx.doi.org/10.1371/journal.pone.0065159>.
- 43 Cacciatori C (Colorado Veterinary Medical Association, Denver, CO). Email to: Regina M. Schoenfeld-Tacher (College of Veterinary Medicine, North Carolina State University, Raleigh, NC). 2016 March 14.
- 44 Holley C (North Carolina Veterinary Medical Association, Raleigh, NC). Email to: Regina M. Schoenfeld-Tacher (College of Veterinary Medicine, North Carolina State University, Raleigh, NC). 2016 March 15.
- 45 Slater MR, Slater M. Women in veterinary medicine. *J Am Vet Med Assoc.* 2000;217(4):472–6.

- Medline:10953706 <http://dx.doi.org/10.2460/javma.2000.217.472>.
- 46 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(10):1121–30. Medline:26517615 <http://dx.doi.org/10.2460/javma.247.10.1121>.
 - 47 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(7):739–42. Medline:26383746 <http://dx.doi.org/10.2460/javma.247.7.739>.
 - 48 Collins H, Foote D. Managing stress in veterinary students. *J Vet Med Educ*. 2005;32(2):170–2. Medline:16078168 <http://dx.doi.org/10.3138/jvme.32.2.170>.
 - 49 Cake MA, Bell A, Bickley N, et al. The life of meaning: a model of the positive contributions to well-being from veterinary work. *J Vet Med Educ*. 2015;42(3):184–93. Medline:26075621 <http://dx.doi.org/10.3138/jvme.1014-097R1>.
 - 50 Turner AL, Malm RL. A preliminary investigation of Balint and non-Balint behavioral medicine training. *Fam Med*. 2004;36(2):114–22. Medline:14872358
 - 51 Atkinson D, Rosenstock J. A role for Balint groups in medical student training. *Ann Behav Sci Med Educ*. 2015;21(1):38–43. <http://dx.doi.org/10.1007/BF03355307>.
 - 52 Torppa MA, Makkonen E, Mårtenson C, et al. A qualitative analysis of student Balint groups in medical education: contexts and triggers of case presentations and discussion themes. *Patient Educ Couns*. 2008;72(1):5–11. Medline:18295432 <http://dx.doi.org/10.1016/j.pec.2008.01.012>.
 - 53 Zwerling M. The gathering of physicians. *Sonoma Med* [Internet]. 2003 [cited 2016 Jul 14];54(2). Available from: <http://www.nbcmcs.org/about-us/sonoma-county-medical-association/magazine/sonoma-medicine-the-gathering-of-physicians.aspx?pageid=460&tabid=747>.
 - 54 Petrovčič A, Petrič G, Manfreda KL. The effect of email invitation elements on response rate in a web survey within an online community. *Comput Human Behav*. 2016;31(56):320–9. <http://dx.doi.org/10.1016/j.chb.2015.11.025>.
 - 55 Association of American Veterinary Medical Colleges (AAVMC). Annual data report 2014–2015 [Internet]. Washington, DC: AAVMC; 2015 [cited 2016 Jan 11]. Available from: <http://www.aavmc.org/About-AAVMC/Public-Data.aspx>
 - 56 Sulzer SH, Feinstein NW, Wendland CL. Assessing empathy development in medical education: a systematic review. *Med Educ*. 2016;50(3):300–10. Medline:26896015 <http://dx.doi.org/10.1111/medu.12806>.

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