

Perspectives in Professional Education

Faculty perspectives regarding the importance and place of nontechnical competencies in veterinary medical education at five North American colleges of veterinary medicine

India F. Lane, DVM, MS, EdD, DACVIM, and E. Grady Bogue, EdD

Objective—To explore perceptions of faculty educators regarding the importance of nontechnical competencies in veterinary graduates and the placement of nontechnical competency development in veterinary education.

Design—Survey.

Sample Population—All faculty members at 5 North American veterinary medical institutions.

Procedures—Participants rated the importance of 14 nontechnical competencies and indicated in which phase or phases of veterinary education such competencies should be developed (ie, curriculum placement). Differences in mean ratings were statistically evaluated, as were associations between ratings or curriculum placement and respondent institution, gender, experience, and discipline.

Results—Mean ratings of importance were above neutral for all competencies and were highest for ethical, critical thinking, and interpersonal and intrapersonal competencies; development of these competencies was favored in preveterinary and veterinary training. Ratings were lower for management and business competencies; development of these and other competencies was placed primarily in the clinical phase of the veterinary curriculum. Basic science, nonveterinarian, and junior faculty appeared to more strongly appreciate the importance of nontechnical skills, whereas large animal and midcareer faculty reported a more reserved degree of support. Female faculty were more likely to place nontechnical competency development throughout the educational process.

Conclusions and Clinical Relevance—Participants agreed nontechnical competencies are important for veterinary graduates; however, faculty perceptions differed from previously published findings regarding the relative importance of business and management skills. Those involved in faculty hiring, faculty development, and curricular planning should also be aware of disciplinary and career stage differences affecting faculty perspectives. (*J Am Vet Med Assoc* 2010;237:53–64)

Successful veterinary practice requires a unique combination of medical competence and other professional skills including empathy, communication skills, and business and management skills. Veterinarians today are also in demand in nonpractice careers such as those in academia, industry, government, and public health; all are fields that rely on similar broad sets of skills. At

From the Department of Small Animal Clinical Sciences, College of Veterinary Medicine (Lane), and Department of Educational Leadership and Policy Studies, College of Education, Health and Human Sciences (Bogue), University of Tennessee, Knoxville, TN 37996.

This manuscript represents a portion of a dissertation submitted by Dr. Lane to the University of Tennessee College of Education, Health and Human Sciences as partial fulfillment of the requirements for a Doctor of Education in Higher Education Administration degree.

Presented as a poster at the International Association of Medical Science Educators Annual Meeting, Leiden, The Netherlands, July 2009.

The authors thank Cary Springer for statistical support. Address correspondence to Dr. Lane (ilane@utk.edu).

ABBREVIATIONS

AAVMC	Association of American Veterinary Medical Colleges
BS	Basic Science
CS-DS	Clinical Sciences–Diagnostic Sciences
CS-LA	Clinical Sciences–Large Animal
CS-O	Clinical Sciences–Other
CS-SA	Clinical Sciences–Small Animal
EI	Emotional intelligence
GPA	Grade point average
KPMG LLP	United States limited liability partnership affiliated with KPMG International
SKA	Skills, knowledge, aptitudes, and attitudes

the turn of the millennium, results of 2 national studies focusing on the economic success of the veterinary profession strongly indicated that many veterinarians possess the medical knowledge, but not the ancillary

skills, that determine their economic success. Results of the Brakke study,¹ involving thousands of practicing veterinarians and practice owners, indicated self-esteem and business, management, and financial practices of veterinarians could positively impact personal and practice income. Recommendations from another study² of market and economic forces affecting the profession (conducted by KPMG LLP) included additional training in communication, business and management skills, sales and marketing, computer expertise, and research skills for veterinarians. Recent veterinary school graduates, practicing alumni of veterinary colleges, and employers of veterinarians also desire more emphasis on communication training, business skills, and financial planning skills.³⁻⁷ A mismatch of academic goals versus those of practicing veterinarians may contribute to the deficiencies in perceived preparation.⁴

Under the leadership of the AAVMC and the National Commission on Veterinary Economic Issues, a consortium of veterinary college administrators and practice management consultants conducted focus groups of successful veterinarians identified from several state veterinary associations, alumni associations, and veterinary colleges. From these focus groups, 6 themes emerged to help redefine success: personal fulfillment, pride and fun in work, a helping orientation, a balanced lifestyle, respect and professional recognition, personal goal achievement, and satisfactory economic compensation. The primary competencies leading to the development of success in these individuals were extracted from focus group discussions and interviews.⁸ The list of key nontechnical competencies included multiple SKA in 5 categories: interpersonal, self-management, leadership, business, and thinking competencies. Recommendations from the recent report⁹ of the AAVMC Foresight Project include attention to similar skills, adding crisis management and cultural competency.

In all discussions related to implementation of these ideas, it has been recognized that a successful program requires an ongoing, longitudinal approach to achieving these objectives throughout the preveterinary and veterinary program. For example, Lloyd and Walsh,¹⁰ in proposing a model curriculum for nontechnical skills, pointed out the barriers to successful implementation: "Key constraints identified in implementation of the model curriculum include the need to gain widespread acceptance of the topics' importance (by students, faculty, administrators), frequent limitations in available financial and human resources (ie, who will teach the material), and uncertain delivery systems."

In a follow-up survey of veterinary colleges conducted in the summer of 2003, Lloyd and King¹¹ identified several changes underway at veterinary colleges, including new or modified prerequisites, admissions procedures, orientation practices, curricular offerings, and cocurricular activities such as club meetings or workshops, as well as new programs in management or research. Of note, nonfaculty participants contributed heavily to these programs, including administrators, external practitioners, professional organizations, and psychologists.¹² In updates several years later came anecdotal reports^{13,14} of ongoing dialogue and continued progress in veterinary academia. However, mention of

faculty involvement, support, and training for new programs was lacking.

To meet new educational goals, costly and time-consuming efforts are required. Veterinary faculty will be the essential link between the conceptualization of nontechnical competency development and effective delivery. Teaching faculty must acknowledge and accept the importance of nontechnical skill development and be willing to sacrifice professional time, energy, and content coverage to incorporate additional skill development into crowded veterinary courses and curricula. The purpose of the study reported here was to explore the perceptions of faculty educators at selected North American veterinary colleges regarding the importance of nontechnical competencies and the place for their development in veterinary graduates.

Materials and Methods

Setting—Seven North American colleges of veterinary medicine were invited to participate. Institutions were chosen to include a range of geographic locations, sizes of faculty, years of operation, and degrees of engagement in nontechnical competency development. Permission was obtained from each institution's academic dean or appropriate faculty committee. Faculty names, ranks, and e-mail addresses were obtained from public websites of participating institutions, with individuals added or deleted as indicated by institutional contacts or based on multiple returned electronic mailings or postcards. All procedures underwent a departmental review for human subjects research and were deemed exempt from further institutional review by the University of Tennessee Office of Research.

Survey development—The basis of the survey was the available veterinary literature regarding essential nontechnical skills.^{8,9} Descriptions of the skills in the study were modified from the literature to collapse the skill sets into a manageable number and to create labels and definitions that would have meaning for the faculty responding to the survey (Appendix). Independent variables were chosen to include common demographic variables and factors that would distinguish the background and varied educational missions of veterinary academicians. In this study, content validity was ensured by use of multiple veterinary and educational experts to review the survey design and questions. The survey was also pilot tested by several faculty members at each institution to ensure clarity of questions and instructions, effectiveness and reliability of the Web interface, and accuracy of data captured.

Sampling method—All faculty members at the selected institutions were invited to participate in January 2008. The contact strategy included 3 electronic mail contacts and 1 postcard reminder. An incentive (the chance to win one of several online shopping gift certificates) was offered to encourage participation. Nonrespondents received a second, signed postcard and 2 to 3 additional electronic mail reminders, individualized to the participant and institution.¹⁵ The survey collection period extended for 60 days from the first notice. All survey collection ended by June 2008.

Survey instrument—Participating faculty accessed the survey via a Web interface.^a The purpose of the research, methods, and terms were displayed at the beginning of the survey; respondents indicated their consent by choosing to proceed to the next survey question. Respondents not involved in the training of veterinary students were excluded from the study. Participating faculty members also could exit the survey or withdraw their participation from the study at any time prior to data analysis.

The survey asked respondents to indicate their degree of agreement for the importance of 14 competencies for veterinary graduates. Respondents who rated the importance of a competency higher than 4 on the 7-point scale were also asked when that competency should be taught or cultivated, with the opportunity to select any or all of 4 responses: prior to entering professional veterinary education, during preclinical professional veterinary education, during clinical professional veterinary education, and following completion of professional veterinary education. Independent variables included the respondent's institution, gender, academic degree, primary effort allocation, primary discipline, age, and experience (including years teaching, year graduated, and academic rank).

Statistical analysis—Statistical analyses were performed by use of automated software.^b Demographic and frequency results were summarized descriptively for the respondents. The Fisher exact test, χ^2 test, or both were used to detect associations between response rate and institution and between the proportions of males and females responding to the survey versus the gender distribution of the study sample. The χ^2 statistic was used to evaluate associations among categorical independent variables, including institution, sex, year graduated from veterinary school or received terminal degree, years of teaching experience (in groups), academic rank, primary discipline, and primary effort allocation.

Differences among overall mean ratings of competency importance were determined by means of a general linear model repeated-measures ANOVA and the Wilks λ distribution for multivariate probability testing for linearly independent data. This method was used to examine mean ratings of importance for within-subjects effects (suggesting differences in ratings of selected competencies) or between-subjects effects (suggesting differences in the overall pattern of ratings) of each independent variable measured, including institution, gender, year graduated, years of teaching experience (in groups), academic rank, primary discipline, and primary effort allocation. When significant interactions were detected between competency ratings and an independent variable, differences between groups were isolated by use of the appropriate post hoc tests, most commonly the Tukey honestly significant difference test for multiple pairwise comparisons for multivariate data and the Student *t* test for independent samples for bivariate data. Measures of association between placement of nontechnical competencies in each phase of veterinary education (preveterinary, preclinical veterinary, clinical veterinary, and postgraduate) and each independent variable were performed by χ^2 analysis. A value of $P \leq 0.05$ was considered significant for all analyses.

Results

Participants and response rate—Five of 7 invited institutions agreed to participate (institution A: approximately 35-year-old, midsize veterinary college in the southeastern United States; B: approximately 20-year-old, small public veterinary college in Canada; C: > 100-year-old, midsize veterinary college in the southern United States; D: > 100-year-old, small veterinary college in the northern United States; E: new (< 5-year-old), small veterinary college in the western United States). The target population (or sample) included 429 faculty members. By closing of the survey, 209 faculty members accessed the survey for a total response return rate of 49%. Data were excluded from further analysis when incomplete ($n = 10$) or when respondents were not directly involved in teaching professional veterinary students (13), leaving a final sample size of 186 faculty members.

Response rates (number responding and percentage) varied among institutions, from 34% to 60%. The proportions of faculty members from each institution represented in the final sample varied significantly (χ^2 test, $P = 0.023$; $n = 186$), with faculty members at institution A slightly overrepresented and faculty members at institution D slightly underrepresented. Ninety-five (51%) respondents were male, 84 (45%) were female, and 7 (4%) declined to report gender. In comparison, the gender distribution of faculty in the participating veterinary colleges was 63% male and 37% female. The gender distribution of respondents was significantly different from the gender distribution of the sample (χ^2 test, $P = 0.006$; $n = 179$), with female faculty members more likely to respond to the survey than were males. Characteristics of respondents and their institutions were summarized (Table 1).

Associations among independent variables—Institution was not associated with gender, discipline, or degree status (Table 1). There was an association between institution and number of years teaching, with those teaching < 9 years overrepresented in institution E, those teaching for 9 to 17 years overrepresented in institution A, and those teaching for at least 25 years overrepresented in institution C (χ^2 test, $P = 0.002$; $n = 186$). Academic rank was highly associated with gender but did not differ by institution. Males were overrepresented in the professor group and underrepresented in the assistant professor group (χ^2 test, $P = 0.009$; $n = 175$). Nonveterinarian status was highly associated with BS disciplines (χ^2 test, $P \leq 0.001$; $n = 186$); many of these faculty held a PhD as a terminal degree. Gender also was associated with primary discipline, with males overrepresented in CS-LA fields and females overrepresented in CS-SA (χ^2 test, $P = 0.023$; $n = 179$).

Ratings of importance—Veterinary faculty members generally perceived the nontechnical competencies as important for veterinary graduates; all mean and median ratings of agreement were considerably higher than 4.0, which was considered the neutral response on the 7-point scale (Table 2). Respondents strongly agreed that ethics and moral responsibility, critical thinking, self-development and lifelong learning, interpersonal skills, communication skills, and motivation

and persistence were important (all means > 6.5). Mean ratings for the remaining competencies were as follows (in order of importance): self-management and flexibility, > 6.0 and ≤ 6.5; creativity, crisis and incident

management, cultural competence, and coaching skills, > 5.5 and ≤ 6.0; and business and leadership skills, > 5 and < 5.5. Mean ratings of individual competencies differed significantly among subjects (*F* test, *P* < 0.001; *n* = 186).

Through repeated-measures ANOVA, mean responses were compared, with each independent variable acting as a between-subjects factor. In this way, the data were analyzed to detect effects of each variable on the pattern of means (within-subjects effects) or on a group of respondents' overall responses regarding the 14 competencies (between-subjects effects). Post hoc analyses were completed to isolate significant within-subjects effects. There were no differences within competency means attributable to the factors institution, gender, primary effort area, discipline, or academic rank. Significant differences were discovered within competency ratings based on degree status (DVM vs non-DVM; *F* test, *P* = 0.001; *n* = 186), year of graduation (4 categories: 1960 to 1978 [47], 1979 to 1984 [48], 1985 to 1992 [45], and 1993 to 2006 [46]; *F* test, *P* = 0.019), and years of teaching experience (4 categories: 1 to 8 years [44], 9 to 17 years [50], 18 to 24 years [50], and ≥ 25 years [42]; *F* test, *P* = 0.036).

DVM STATUS

Respondents without a veterinary medical degree rated selected competencies higher in importance than did those with a DVM or equivalent degree (Table 3). When competencies were examined by use of the Student *t* test for independent samples for post hoc analysis, non-DVM respondents indicated a higher degree of agreement in the importance of business skills, cultural competence, self-management, ethics and moral responsibility, and crisis and incident management than did DVM respondents. The difference in means for leadership skills had a similar pattern but did not reach significance (*P* = 0.059).

Table 3—Mean ± SD degree of agreement regarding the importance of 14 nontechnical competencies in a survey of DVM (*n* = 164) and non-DVM (22) faculty members from 5 veterinary colleges in North America.

Competency	DVM	Non-DVM	P value
Ethics and moral responsibility	6.82 ± 0.52	6.95 ± 0.21	0.035
Critical thinking	6.80 ± 0.44	6.77 ± 0.43	0.748
Self-development and lifelong learning	6.73 ± 0.53	6.55 ± 0.80	0.300
Interpersonal skills	6.64 ± 0.64	6.50 ± 0.80	0.348
Communication skills	6.57 ± 0.66	6.68 ± 0.57	0.436
Motivation and persistence	6.54 ± 0.63	6.55 ± 0.67	0.985
Self-management	6.45 ± 0.74	6.73 ± 0.55	0.038
Flexibility	6.25 ± 0.93	6.32 ± 0.78	0.743
Creativity	5.96 ± 0.89	6.05 ± 0.79	0.659
Crisis and incident management	5.88 ± 1.00	6.36 ± 0.85	0.030
Cultural competence	5.61 ± 1.15	6.18 ± 0.73	0.003
Coaching skills	5.49 ± 1.07	5.82 ± 1.26	0.193
Business skills	5.37 ± 1.07	6.23 ± 0.97	< 0.001
Leadership skills	5.40 ± 1.10	5.86 ± 1.04	0.059

A value of *P* ≤ 0.05 was considered significant.
See Table 2 for remainder of key.

Table 1—Characteristics of respondents and interinstitutional differences in a survey of 186 faculty members from 5 veterinary colleges in North America.

Factor	Value	P value
Gender		0.358
Male	95 (53)	
Female	84 (47)	
Degree		0.928
DVM	164 (88)	
Non-DVM	22 (12)	
Primary effort allocation		0.043
Teaching	136 (73)	
Research	26 (14)	
Service or administration	24 (13)	
Primary discipline		0.193
BS	49 (26)	
CS-SA	53 (28)	
CS-LA	33 (18)	
CS-DS	32 (17)	
CS-O	19 (10)	
Rank		0.152
Instructor	11 (6)	
Assistant professor	56 (31)	
Associate professor	56 (31)	
Professor	59 (32)	
Age	48.5 (28–71)	—
Years teaching	17 (1–45)	0.002
Graduation year	1985 (1960–2006)	—

Values for categorical variables (ie, gender, degree, primary effort allocation, primary discipline, and rank) are reported as total number (percentage). Values for continuous variables (ie, age, years teaching, and graduation year) are reported as median (range). A value of *P* ≤ 0.05 was considered significant.
— = Not applicable.

Table 2—Mean and SD degree of agreement regarding the importance of 14 nontechnical competencies in a survey of 186 faculty members from 5 veterinary colleges in North America.

Competency	Mean	SD
Ethics and moral responsibility	6.84 ^a	0.494
Critical thinking	6.80 ^a	0.439
Self-development and lifelong learning	6.71 ^{a,b}	0.571
Interpersonal skills	6.62 ^{b,c}	0.656
Communication skills	6.58 ^{b,c}	0.646
Motivation and persistence	6.54 ^c	0.633
Self-management	6.48 ^{c,d}	0.722
Flexibility	6.26 ^d	0.911
Creativity	5.97 ^a	0.876
Crisis and incident management	5.94 ^{a,f}	0.990
Cultural competence	5.68 ^{f,g}	1.121
Coaching skills	5.53 ^g	1.096
Business skills	5.47 ^g	1.091
Leadership skills	5.45 ^g	1.101

^{a–g}Means with different superscript letters are significantly (*P* ≤ 0.05) different.
A 7-point Likert scale was used, with 1 indicating strongly disagree and 7 indicating strongly agree. Ratings differed significantly within subjects (*F* test, *P* < 0.001; *n* = 173).

AGE, YEAR OF GRADUATION, AND YEARS OF TEACHING EXPERIENCE

Respondents provided information regarding their age, year of first terminal degree (year of graduation), and number of years of involvement in teaching veterinary students, including years as a house officer or graduate student if those positions involved direct contact with veterinary students. Calculation of Pearson correlation coefficients revealed importance ratings were not significantly correlated with age (years), year of graduation, or number of years teaching. The effect of age was examined by preliminary analysis of means by age in quartiles and several test groupings, including groups in 5- or 10-year ranges and groups by expected career stage. No significant interactions or overall effects for age were found through any grouping method, and the variable age was eliminated from all further analyses.

However, when years teaching and year of graduation were examined in the same manner, significant interactions became evident between ratings and year of graduation in quartiles ($P = 0.019$) and years teaching when grouped by expected career stage ($P = 0.026$). Groupings for year of graduation were established as follows: 1993 to 2006, 1985 to 1992, 1979 to 1984, and before 1979. Groupings for number of years teaching veterinary students were as follows: < 9 years (expected postgraduate studies and probationary faculty period), 9 to 17 years (expected advancement to associate professor and fulfillment of associate-level tenure), 18 to 24 years (expected early full professor period), and 25 years or more (established and advanced full professor).

A significant ($P = 0.019$) effect on mean ratings of competencies was detected among respondents when the year of first terminal degree was considered. When examined in quartiles, significant differences were detected among groups in interpersonal skills (F test, $P = 0.039$; $n = 186$) and motivation and persistence (F test, $P = 0.040$; 186), in which ratings of the most recent graduates

(1993 to 2006) were higher than ratings of the next most recent graduates (1985 to 1992). Significant differences were also evident in ratings for communication skills (F test, $P = 0.013$; $n = 186$) and crisis and incident management (F test, $P = 0.009$; 186), for which ratings of the most recent graduates differed from those of 1985–1992 and 1979–1984 graduates.

A significant (F test, $P = 0.26$) interaction was detected between mean ratings of competencies and years teaching by career stage group, in which differences were evident in mean ratings for the value of interpersonal skills and crisis and incident management. For both competencies, ratings by faculty with < 9 years of experience were higher than those with 18 to 24 years of experience (Table 4).

DISCIPLINE

An overall between-subjects effect of primary discipline on mean ratings of competencies was detected (Table 5). Means were highest for CS-O respondents (6.46), followed by BS (6.35), CS-DS (6.21), CS-SA (6.11), and CS-LA (5.98). Between subjects, CS-LA respondents were significantly different in their ratings from CS-O and BS respondents.

Placement of competency development—Faculty responses were summarized by the percentage of faculty placing the competency in a given educational period and by total numbers of responses for each competency (reflecting both relative importance and placement; Table 6). No significant differences in placement of nontechnical competency training within the veterinary curricula were detected among institutions, genders, and career stages of respondents. Isolated differences regarding placement of individual competencies were detected when other independent variables were examined and are not reported here.

INSTITUTION

When compared with other participating institutions, faculty participants of institution D more commonly viewed the preveterinary period as opposed to

Table 4—Mean \pm SD degree of agreement regarding the importance of 14 nontechnical competencies in a survey of faculty members from 5 veterinary colleges in North America, as compared by years of teaching experience.

Competency	Teaching experience (y)				P value
	1–8 (n = 44)	9–17 (n = 50)	18–24 (n = 50)	≥ 25 (n = 42)	
Ethics and moral responsibility	6.84 \pm 0.48	6.82 \pm 0.44	6.88 \pm 0.48	6.81 \pm 0.59	0.905
Critical thinking	6.80 \pm 0.41	6.84 \pm 0.42	6.87 \pm 0.41	6.70 \pm 0.51	0.266
Self-development and lifelong learning	6.82 \pm 0.45	6.70 \pm 0.65	6.67 \pm 0.48	6.66 \pm 0.67	0.498
Interpersonal skills	6.82 \pm 0.45	6.70 \pm 0.54	6.46 \pm 0.84*	6.52 \pm 0.67	0.033
Communication skills	6.68 \pm 0.64	6.58 \pm 0.61	6.56 \pm 0.675	6.50 \pm 0.67	0.622
Motivation and persistence	6.64 \pm 0.53	6.56 \pm 0.71	6.46 \pm 0.65	6.52 \pm 0.63	0.599
Self-management	6.59 \pm 0.62	6.54 \pm 0.65	6.42 \pm 0.84	6.36 \pm 0.76	0.403
Flexibility	6.14 \pm 1.21	6.22 \pm 0.89	6.38 \pm 0.73	6.29 \pm 0.77	0.617
Creativity	6.00 \pm 0.99	6.04 \pm 0.86	5.98 \pm 0.77	5.83 \pm 0.91	0.709
Crisis and incident management	6.16 \pm 0.78	6.10 \pm 0.97	5.60 \pm 1.07*	5.90 \pm 1.03	0.023
Cultural competence	5.89 \pm 1.10	5.86 \pm 0.93	5.36 \pm 1.16	5.62 \pm 1.25	0.072
Coaching skills	5.80 \pm 1.19	5.46 \pm 1.09	5.30 \pm 1.04	5.62 \pm 1.04	0.153
Business skills	5.66 \pm 1.08	5.46 \pm 1.18	5.40 \pm 0.99	5.36 \pm 1.12	0.580
Leadership skills	5.48 \pm 1.27	5.60 \pm 1.01	5.26 \pm 1.12	5.48 \pm 0.99	0.484

*Group mean differs from mean for 1 to 8 years of teaching experience.
n = Number of respondents.
See Table 2 for remainder of key.

Table 5—Mean \pm SD degree of agreement regarding the importance of 14 nontechnical competencies in a survey of faculty members from 5 veterinary colleges in North America, as compared by respondent primary discipline.

Competency	BS ^a (n = 49)	CS-O ^a (n = 19)	CS-DS ^{a,b} (n = 32)	CS-SA ^{a,b} (n = 53)	CS-LA ^b (n = 33)
Ethics and moral responsibility	6.88 \pm 0.39	6.95 \pm 0.23	6.91 \pm 0.30	6.79 \pm 0.50	6.73 \pm 0.80
Critical thinking	6.84 \pm 0.37	7.00 \pm 0.00	6.84 \pm 0.37	6.74 \pm 0.37	6.70 \pm 0.64
Self-development and lifelong learning	6.74 \pm 0.57	6.74 \pm 0.56	6.63 \pm 0.61	6.76 \pm 0.52	6.67 \pm 0.65
Interpersonal skills	6.61 \pm 0.67	6.84 \pm 0.50	6.78 \pm 0.61	6.62 \pm 0.56	6.36 \pm 0.82
Communication skills	6.65 \pm 0.60	6.74 \pm 0.45	6.69 \pm 0.54	6.53 \pm 0.60	6.36 \pm 0.82
Motivation and persistence	6.69 \pm 0.55	6.68 \pm 0.67	6.53 \pm 0.57	6.43 \pm 0.61	6.42 \pm 0.79
Self-management	6.74 \pm 0.53	6.58 \pm 0.69	6.56 \pm 0.56	6.26 \pm 0.76	6.30 \pm 0.92
Flexibility	6.33 \pm 0.80	6.37 \pm 1.42	6.44 \pm 0.67	6.19 \pm 0.90	6.03 \pm 0.92
Creativity	6.12 \pm 0.88	6.37 \pm 0.76	5.84 \pm 0.88	5.83 \pm 0.88	5.85 \pm 0.15
Crisis and incident management	6.33 \pm 0.72	6.21 \pm 0.79	5.78 \pm 1.04	5.66 \pm 1.16	5.79 \pm 0.93
Cultural competence	5.92 \pm 0.93	6.05 \pm 0.97	5.63 \pm 1.07	5.60 \pm 1.19	5.18 \pm 1.26
Coaching skills	5.78 \pm 1.01	6.00 \pm 1.00	5.53 \pm 1.16	5.43 \pm 1.01	5.06 \pm 0.97
Business skills	5.63 \pm 1.07	5.95 \pm 0.97	5.31 \pm 0.86	5.36 \pm 1.07	5.27 \pm 1.26
Leadership skills	5.74 \pm 1.08	6.00 \pm 1.00	5.44 \pm 0.91	5.26 \pm 1.08	5.03 \pm 1.24

^{a,b}Values of groups with different superscript letters are significantly ($P > 0.05$) different.
n = Number of respondents.
See Table 2 for remainder of key

Table 6—Number (percentage) of faculty members from 5 veterinary colleges in North America who agreed that 14 nontechnical competencies should be developed in veterinary students and veterinarians at certain points during their training.

Competency	Total No. of responses	Timing of development			
		Prior to veterinary training	During preclinical veterinary training	During clinical veterinary training	Following graduation
Ethics and moral responsibility	184	148 (80)	144 (78)	130 (71)	100 (54)
Critical thinking	186	124 (67)	161 (87)	158 (85)	114 (61)
Self-development and learning	185	110 (59)	135 (73)	142 (77)	132 (71)
Interpersonal skills	183	138 (75)	128 (70)	133 (73)	79 (43)
Communication skills	151*	129 (85)	135 (89)	131 (87)	99 (66)
Motivation and persistence	186	146 (78)	123 (66)	124 (67)	72 (39)
Self-management	185	120 (65)	119 (64)	140 (76)	71 (38)
Flexibility	180	130 (72)	118 (66)	141 (78)	96 (53)
Creativity	179	126 (70)	119 (66)	145 (81)	110 (61)
Crisis and incident management	173	46 (46)	98 (57)	147 (85)	120 (69)
Cultural competence	163	136 (83)	95 (58)	110 (75)	92 (56)
Coaching skills	159	94 (59)	94 (59)	102 (64)	97 (61)
Business skills	155	59 (38)	99 (64)	110 (71)	110 (71)
Leadership skills	152	119 (78)	100 (66)	101 (66)	88 (58)

*Numbers of respondents are underrepresented because of technical error.

other periods as an important place for nontechnical competency development, particularly the competencies of critical thinking ($P = 0.032$), self-development and lifelong learning ($P = 0.004$), and flexibility ($P = 0.011$). Faculty from institution E were more likely than faculty from other institutions to support cultivation of nontechnical competencies during the preclinical portion of the veterinary professional curriculum, particularly with respect to critical thinking ($P = 0.038$), self-development and lifelong learning ($P = 0.009$), self-management ($P = 0.001$), motivation and persistence ($P = 0.049$), and crisis management ($P = 0.012$). There were no differences among institutions regarding the cultivation of nontechnical competencies during the clinical or postgraduate training periods.

GENDER

Female respondents were more likely than male respondents to agree that nontechnical competencies should be cultivated throughout the professional veterinary program (Figure 1). Female faculty members were more likely than males to support the development of critical thinking ($P = 0.041$), self-development and lifelong learning ($P = 0.04$), interpersonal skills ($P = 0.048$), self-management ($P = 0.015$), and business skills ($P = 0.011$) in the preclinical years. Females were also more likely than males to agree that development of interpersonal skills ($P = 0.043$), communication skills ($P = 0.006$), creativity ($P = 0.001$), coaching skills ($P = 0.001$), and business skills ($P = 0.037$) should be continued after graduation.

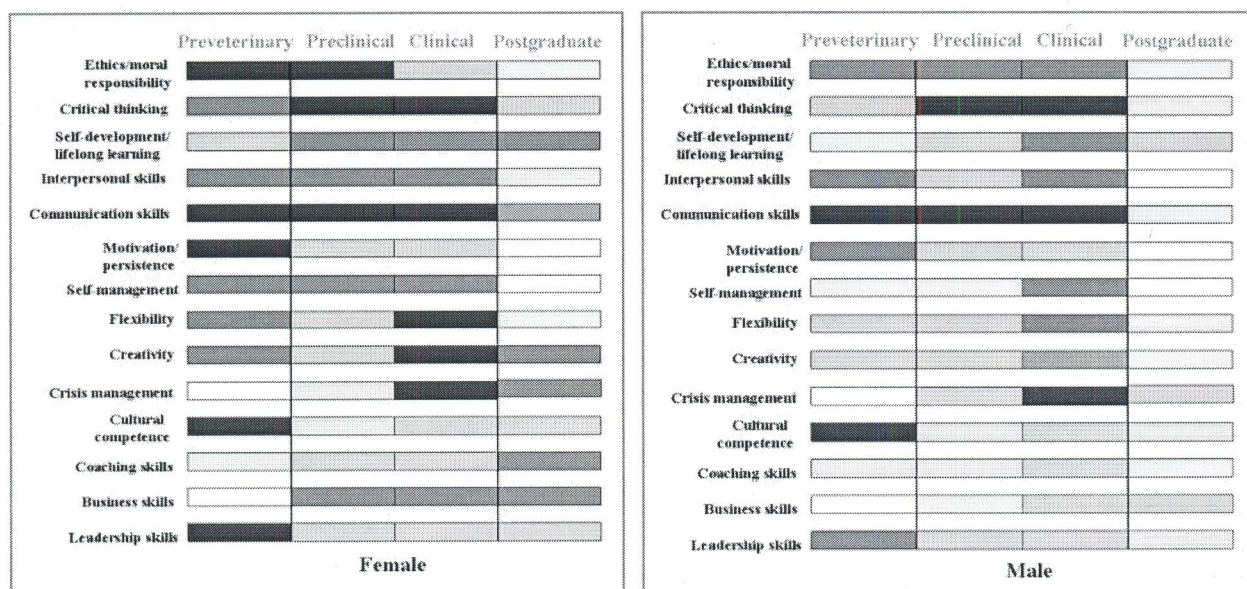


Figure 1—Schematic representations comparing male and female faculty support for the development of nontechnical competencies at various phases (preveterinary, preclinical veterinary, clinical veterinary, and postgraduate training) of veterinary education. Darker shades represent higher percentages of respondents agreeing that a competency should be taught or cultivated in each phase. Black = $\geq 80\%$; dark gray = $\geq 70\%$ but $< 80\%$; medium gray = $\geq 60\%$ but $< 70\%$; light gray = $\geq 50\%$ but $< 60\%$; lightest gray = $\geq 40\%$ but $< 50\%$; and white = $< 40\%$.

YEAR OF GRADUATION

The most recent graduates (1993 to 2006) were less likely to include development of many nontechnical competencies as important in 1 or more educational phases. For example, these were significantly less likely than faculty in other groups to indicate that interpersonal skills should be developed in the preveterinary ($P = 0.045$) or clinical veterinary ($P = 0.018$) training periods. The 1993–2006 respondents were significantly less likely to place cultivation of self-management, motivation and persistence, ethics and moral responsibility, self-development and lifelong learning, flexibility, leadership skills, and business skills in the clinical phase of veterinary education. These respondents also were significantly less likely to place creativity in the preclinical veterinary curriculum and to place self-development and lifelong learning in the postgraduate period.

ACADEMIC RANK

Curricular placement of nontechnical competencies was examined for respondents in the instructor, assistant professor, associate professor, and professor ranks. However, the small number of instructors included in the study (and the small number of instructors in many response cells) limited application of χ^2 analysis. The instructor group was then combined with the assistant professor group for further analysis.

This group of junior faculty had a unique response pattern, being less likely than respondents of other ranks to place competency development in various educational settings, particularly in the clinical setting. Differences between junior and other faculty were significant for ethics and moral responsibility ($P = 0.050$; $n = 180$), business skills ($P = 0.010$; 151), and leadership ($P = 0.010$; 149) but were not significant for self-

management ($P = 0.052$; 181). Respondents holding the rank of instructor or assistant professor were also less likely to envision a place for ongoing development of certain competencies after graduates leave the veterinary program, including self-management ($P = 0.240$; $n = 181$), self-development and lifelong learning ($P = 0.370$; 181), flexibility ($P = 0.130$; 176), and leadership ($P = 0.130$; 149). Responses for crisis and incident management also were not significant ($P = 0.052$; $n = 168$). Finally, instructors or assistant professors were less likely to place leadership in the preclinical educational period than were respondents of other ranks ($P = 0.320$; $n = 149$).

On the other hand, associate professors appeared more likely to support development of nontechnical competencies in the latter stages of the training process; they were significantly more likely to place ethical development ($P = 0.050$; $n = 181$) in the clinical education phase and more likely to place self-development and lifelong learning ($P = 0.013$; 181) and flexibility ($P = 0.011$; 180) in the postgraduate period than were other faculty. Finally, associate professors were more likely to expect development of critical thinking skills prior to entering the professional program ($P = 0.049$; $n = 181$). The only competency in which responses of senior faculty differed from the overall response was business skills; professors were more likely to support the cultivation of these skills in the clinic ($P = 0.010$).

Discussion

In the survey reported here, participating veterinary faculty members supported the overall importance of nontechnical competence in veterinary graduates. The positive degree of agreement for all competencies reflected significant progress in academic veterinary

medicine because the focus on nontechnical skills is relatively new. Additionally, consensus support was apparent for the placement of nontechnical competencies in veterinary education, particularly during the clinical phase of the veterinary curriculum. With few exceptions, faculty also appeared in agreement that these nontechnical SKA are best fostered during multiple points in the continuum of veterinary education, supporting the value of ongoing work in admissions, curriculum development, extracurricular programs, and clinical education. The results of this study also affirmed reports that veterinary educators are discussing and increasingly working toward improved nontechnical SKA in their students.^{14,16-18} The voices of faculty members captured here suggested this educator dialogue has been positive and constructive.

Faculty certainly expected veterinary students to come to veterinary training with at least the foundational development of most nontechnical skills, particularly a grounding in ethical and moral integrity; intrapersonal attributes such as motivation, persistence toward goals, and flexibility; and interpersonal skills including communication, cultural competence, and leadership skills. Faculty most strongly and consistently agreed that ethics, critical thinking, and self-management are important for veterinary graduates and should be part of professional veterinary education. The Veterinarian's Oath, adopted by the AVMA in 1969, is often the first and last text that veterinary students encounter during their professional veterinary training and alludes to these core values, including an ethical orientation, critical thinking skills, and a commitment to long-term self-development. It is no surprise that faculty give these skills top billing for veterinary graduates because these competencies embody the traditional values of the profession and the educational mission of veterinary colleges.

Lewis and Klausner⁸ grouped ethics, moral responsibility, and self-development within a category of self-management skills that also included motivation, flexibility, and communication skills. Along with interpersonal skills, these competencies were also highly regarded by veterinary faculty in the present study. In particular, veterinary faculty appear to have adopted communication skills as a core competency as promoted by others.¹⁹ Although communication skills training is usually shepherded by a few individuals at any given institution, the growth in common focus on communication issues in the profession can be easily noted by reviewing conference topics and veterinary literature over the past 5 years. Communication skills training requirements also were added as an accreditation standard for colleges of veterinary medicine in 2006.²⁰ Consensus support for the importance of communication skills appeared across institutions and across most faculty variables in the present study. As for other competencies, there was a predictable variance in perceptions of faculty from differing disciplinary backgrounds, but the variance was less dramatic than for other relational or leadership skills. These findings are optimistic and exciting for the profession, particularly because the favorable view and degree of engagement in communication training may spill over to weaker areas

in veterinary education. One can certainly argue that effective communication skills are the common thread for developing good interpersonal, leadership, coaching, and business skills, as well as culturally sensitive interactions with others.

Veterinary faculty were less enthusiastic (yet still positive) about the importance of relational skills critical to the management of others, including cultural competency, coaching, business, and leadership competencies. Moreover, it was these relational competencies in which greater divergence in ratings was uncovered. In the present study, faculty also placed the development of these competencies outside the professional veterinary curriculum. Colleges have been criticized for an underemphasis on practical management and client-relation skills for decades.²¹ The disconnect between faculty perspectives and employer or alumni needs regarding business and leadership skills is striking, as predicted by Lofstedt⁴ and suspected by others.²² Business, management, sales, and marketing skills are desired by employers of veterinarians across practice and nonpractice fields.^{2,23} In regard to fostering business acumen, teaching faculty also may be losing touch with veterinary student needs. Students have recognized the problems associated with the economic realities of practice and the growing debt load of veterinary graduates. Independently, they have created programming, events, and networks within and among veterinary colleges to shore up training and resources for their classmates.²²

Weak support was also apparent for coaching and leadership skills in veterinary graduates. The emphasis on coaching skills is a rather hot topic in business, management, and health care.²⁴ The concept has been applied to coaching of professionals and to coaching of patients to gain desired compliance and outcomes.²⁴⁻²⁶ Obviously, coaching is important in staff training and mentoring of new graduates in private practices.

Recently, the term coach-consultant was used to describe a shift in the role of production veterinarians.²⁷ In large farms or livestock production units, the focus has shifted from the treatment of diseased individual animals to the bigger picture, including population management and preventive health strategies. Given the easy access that all animal owners now have to medical knowledge via the Internet, education in facts and figures may become less important for veterinarians over time. Coaching strategies designed to tailor and monitor short- and long-term care will become more important and could be a distinctive advantage for veterinarians in many practice roles.

In the present study, leadership was defined primarily in the context of influencing others (Appendix) and received the least support of all 14 competencies. The low rating of leadership skills versus other nontechnical competencies illustrated a different kind of disconnect, this time between veterinary college faculty and AAVMC leadership. In contrast, recent reports regarding the future of the veterinary profession have consistently accentuated the need for stronger leadership at all levels. In the words of the AAVMC Foresight Report, "Of critical importance to the status of veterinarians is their expression of leadership."⁹ More visible leaders are expected to contribute to community human-animal is-

sues, crisis management, ecological health, food safety, and public policy.⁹ From an economic perspective, leadership skills are considered essential tools for ensuring a viable career and viable profession because they “embody self-awareness, future thinking, team building and teamwork, communication, and the ability to develop others.”^{14,28} Authors of the AAVMC report pointed out that opportunities are great for all veterinarians to use leadership tools to maximize practice income. Without faculty endorsement, however, the profession may not present a unified front on the importance of leadership for future veterinarians.

Cultural sensitivity was considered moderately important in the present study and was more strongly supported by nonveterinary and nonclinical respondents than by veterinary respondents or clinical faculty, respectively. Educating for cultural competence has received much less attention in veterinary medicine than in other health professions. In other fields such as medicine, nursing, and public health, the expected multicultural patient population provides the basis for student need. In contrast, the veterinary student population and the pet-owning public remain decidedly Caucasian and homogeneous in North America.^{14,29} It would be naïve, however, to think that the multicultural population shifts will not affect the veterinary client population in due time. Indeed, Lloyd¹⁴ suggests that veterinarians who reach out to more diverse groups may tap a new pipeline of clients in the present economic climate.

Within veterinary colleges, cultural sensitivity of the faculty also might impact recruitment, selection, teaching, and assessment of students. Faculty are heavily involved in admissions practices but have limited training and involvement in diversity issues affecting the profession.²⁹ A recent study³⁰ of clerkship grades revealed correlations between the racial or ethnic background of medical students and the grades given to those students by attending physicians. Quiet students and those of minority ethnicity received lower grades than did other students. The authors suggested that the entire medical community may require additional training in cultural sensitivity.³⁰ Curriculum and program leaders at veterinary colleges can expect a wide range of faculty perspectives and opinions regarding culturally sensitive training.

The differences in ratings of the importance of isolated competencies by respondent characteristics cannot be explained or dismissed in broad strokes. However, a few themes warrant extra consideration here. Most dramatically, nonveterinarians and those in nontraditional clinical areas (CS-O respondents) were more inclined to support the importance of nontechnical competencies than were clinical faculty in traditional small or large animal practice. Although the nonveterinarian group was much smaller than other groups, their different viewpoint was striking; outside the community of faculty trained as veterinarians, the importance of nontechnical skills is clearly appreciated. These individuals probably view veterinary students and the veterinary curriculum differently than do faculty members who have completed veterinary school. Academic veterinarians may filter all discussions of veterinary education through the lens of their own experiences and have more difficulty envisioning new or different approaches.

The role of the respondent also was reflected in pointed differences in ratings by discipline, reflecting the effects of socialization or culture in subdisciplines of veterinary medicine. Support for nontechnical competencies was quite high for BS faculty, both with and without veterinary medical degrees. Whereas one might expect a greater emphasis on factual biomedical knowledge in this group, these faculty may in fact be stronger advocates for the holistic development of veterinary students than are clinical faculty. The CS-O faculty ratings of importance were similarly strong. Because respondents self-identified their primary discipline, it is difficult to make conclusions about the faculty in this category, who may be involved with nontraditional species (eg, avian, exotics, or wildlife) or participate in nontraditional aspects of clinical teaching (eg, social work or communication skills).

Significant differences were found in the response patterns of CS-LA faculty. A slightly weaker support for nontechnical competencies in this group, compared with other disciplines, was most pointed for interpersonal and relational competencies. These findings probably reflected a cultural difference in large animal practice, in which the historical orientation to livestock care made attention to population health management and economic realities of veterinary care the most important tools for success. Communication with livestock owners has typically been perceived as unique but less nuanced than with other clients. Despite the importance of economic issues facing livestock owners and large animal veterinarians, there was low support for development of business skills by large animal veterinarians as well. Perhaps the wording and description of this competency did not imply the ability to deal with the economic pressures faced in rural practice. The role of large animal veterinary practice has been changing, however, with equine and small ruminant (goat or sheep) practice leaning toward a companion animal approach and with bovine and other food animal practice leaning to a production and population orientation. The gamut of nontechnical skills will be applied in these varied settings, from communication techniques for dealing with a wide variety of pet owners to savvy business, coaching, and leadership skills for production and population medicine veterinarians.

Quality of life also has become an issue in large animal practice; the physical and mental demands of practice often lead veterinarians to shift practice focus after 5 to 10 years. Although the physical demands might be inevitable, further development of nontechnical competencies such as interpersonal skills, self-management, communication skills, leadership, coaching, and business skills might enable large animal veterinarians to succeed with less stress and personal sacrifice. Articulation of these goals and potential benefits to large animal faculty will be critical to the successful adaptation of nontechnical competency development in veterinary education.

Much has been made of the gender shift in the veterinary profession. The introduction of so-called soft skills and touchy-feely competencies may be viewed as a feminine movement. Female faculty were overrepresented among the survey respondents when compared

with male faculty, which may indicate more interest in the topic among female faculty. However, gender played little role in the faculty ratings of importance of nontechnical competencies. Gender was prominent in view of the point in the curriculum at which development of nontechnical competencies might occur. Women faculty members were more likely to envision a place for nontechnical competency development in all phases of the educational process. Women faculty appeared to appreciate the continuous and holistic development of professional competencies. Similar expectations have been reported for female veterinary students, who rated the importance of nontechnical skills higher than did male students in a study³¹ of 428 students at 1 institution. Female students, who were asked to define a successful veterinarian, rated the importance of lifelong learning, client relations, job satisfaction, ethical behavior, and relationships with staff, colleagues, and patients significantly higher than did male students. They also rated effective interactions with classmates and with professors significantly higher than did males when asked to define a successful veterinary student. Authors of that report³¹ expressed concern that female students maintained higher, perhaps unrealistic expectations of themselves when compared with their male colleagues and might be subject to more self-induced stress. However, the results might reveal an opportunity for veterinary educators to tap into the keen interests of female students in becoming strong communicators, colleagues, team players, and role models and accelerate efforts to refine these skills.

When considering longitudinal development of nontechnical competencies, it will be important to acknowledge changes in veterinary students' perspectives over the course of the educational process as well. Early in veterinary training, students may resist efforts to develop other skills while immersed in the rigorous scientific work required to survive the veterinary curriculum. The perceived value of nontechnical skills also may differ among veterinary students at various stages of the program. Heath et al³² studied 2 classes of Australian veterinary students during their first and fifth year of study and following their first postgraduate year of employment. Characteristics rated highest for a successful veterinarian included the ability to handle animals, gain respect and confidence of clients, and analyze situations and problems logically. Over both periods, there was a significant increase in the perceived importance of interpersonal skills and in the importance of "a capacity for sustained hard work." Unfortunately, there was a decrease over time in the perceived importance of other qualities including honesty, integrity, and dedication.³² Changes over time in students' perceptions regarding important nontechnical skills for veterinarians were reflected in students' attitudes toward the curriculum, where fifth-year students believed that the emphasis on noncognitive skills such as communication, self-awareness, self-confidence, and understanding of people should be increased.³³⁻³⁵

Distinctions among faculty appeared more related to career stage than to age in the study reported here. Whereas differences were small and nonsignificant, early career faculty, as grouped here by year of graduation, years of teaching experience, and academic rank, appeared to have a stronger appreciation for the impor-

tance of nontechnical competencies than did faculty at other career stages and ranks. It seems likely these more recent graduates had some exposure to nontechnical competencies in their educational experience, given that veterinary colleges have implemented programs to address them primarily within the past decade.^{11,13} Alternatively, early career faculty may be more idealistic in nature or more attuned to students' needs because of their own current or recent experiences as a new graduate. However, this same group of respondents did not indicate consensus placement of nontechnical competency development within the veterinary curriculum when compared with other faculty. Faculty in their early careers may appreciate the importance of such skills in veterinary success but believe their development should be cultivated elsewhere.

On the surface, the differences in veterinary college experience may also explain the dip in importance of nontechnical competencies apparent in the responses of midcareer faculty. These faculty members were unlikely to be exposed to organized efforts designed to develop interpersonal, communication, or leadership skills in veterinary school. On the other hand, these faculty members were socialized into the profession through experience and probably were imprinted by strong role models with good nontechnical attributes and skills. They likely assumed that one learns nontechnical skills by observation and assimilation, rather than by overt instruction.

Alternatively, the lag in support among midcareer faculty that was evident in the present study may simply reflect the usual challenges of academia. In the midcareer years, faculty often become overwhelmed with service commitments, growing research programs, and expectations for high-profile accomplishments and are faced with more responsibilities in mentoring students and junior faculty. Using National Study of Postsecondary Faculty (NSOPF-99) data, Baldwin et al³⁶ found faculty in the middle stages spent more time on administrative, consulting, and other work outside their institutions and were less satisfied than faculty at other stages regarding their workload, time available for tasks and professional development, and their jobs overall. All these data fail to take into account the midlife burdens outside the workplace, including demands from children, aging parents, and busy schedules.

A positive finding in our study was an upturn in support among the most senior faculty for development of nontechnical competencies in veterinary students. Senior faculty members can be expected to have a degree of comfort associated with their role and position and to have the time and experiential basis to reflect on educational issues and the future of the profession. They also have more distance from their own days as a veterinary student, hence less concrete impressions related to how veterinary colleges should operate. Life stage also may influence senior faculty members' view of students and student development, as they have watched many students, and perhaps their own children, move into professional careers. In higher education, senior faculty interested in teaching are more receptive to new teaching ideas and more open to discussing ideas about teaching from others than are junior and midcareer faculty.³⁷ Perhaps they can step outside the biomedical perspective and have an appreciation for the value of nontechnical

skills based on their longevity in teaching and experience. Again, the differences among faculty at different career stages are subtle and warrant further exploration.

The primary limitations of the study reported here include those related to the sample and the survey design. Despite a good overall response rate, the final number of returned, completed surveys represented a small percentage of the overall population of veterinary faculty. The number of respondents in certain faculty groups was quite small (for example, there were only 22 non-DVM respondents and only 11 respondents holding the instructor rank). The study is also limited by the number and type of schools included. Additional participating colleges would have increased the sample size; inclusion of a large, research-oriented veterinary school would have added to the diversity of perspectives recorded. Additionally, proportions of respondents from participating schools were uneven, with respondents from 1 institution comprising almost a third of the participating sample.

Response bias also was possible in this nonrandomized design; faculty most interested in the topic might be expected to respond in greater numbers. The final response rate (nearly 50%) and slow response rate (data collected for 60 days) should have largely reduced response bias in this study. Although the survey responses were anonymous, social acceptability of answers still may have influenced responses. Respondents might have been inclined to overstate their perspectives because the topic of nontechnical and other clinical competencies has received so much attention in the profession recently. As a participant in the pilot study said, "Most of these competencies are 'mom and apple pie' kind of things; it'd be hard to argue against their importance." That said, errors related to social desirability, cultural sensitivity, or other subtle personal interpretations of survey questions are considered less likely in self-administered questionnaires than in face-to-face interviews.¹⁵ Closed-ended questions also offered little flexibility or elaboration of faculty responses.

In retrospect, survey construction also limited the interpretation of the final results for some research questions and individual competencies. The tiered approach, in which only faculty who agreed to the importance of a competency had an opportunity to weigh in on the place in the veterinary curriculum in which it should be cultivated, limited the number of data points and viewpoints regarding placement. However, almost all respondents (93% to 100%) agreed to the importance of the top 10 competencies and the aggregate results captured most of the completed sample. Finally, respondents were allowed to choose multiple settings for the placement of nontechnical competencies in preveterinary, veterinary, and postgraduate education, which revealed the views of the spectrum of the education quite nicely. It may have been useful to obtain their opinions regarding the most important place for development of each competency to aid priority planning.

Additional research is needed to expand on the findings of this study. Implementing a modified survey at additional veterinary colleges would increase the numbers in all faculty groups and may further affirm the disciplinary and other differences we detected. Qualitative inquiries should be designed to further explore the dif-

ferences among faculty in various disciplines and at various career and life stages and to learn the perspectives of nonveterinarians teaching in veterinary colleges.

- a. mrInterview, version 4.0, SPSS Ltd, Chicago, Ill.
- b. SPSS DimensionNet, version 14.0, SPSS Ltd, Chicago, Ill.

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Appendix

Definitions of nontechnical veterinary competencies as provided to survey participants.

Competency	Definition
Interpersonal skills	Builds relationships and trust with others by demonstrating interest in their concerns, valuing their perspectives, and treating them with respect.
Self-management	Acts autonomously and confidently in decision making and can work independently.
Motivation and persistence	Drives for results with focused goals, with persistence, and in the face of multiple tasks.
Ethics and moral integrity	Demonstrates integrity, in consistency with the principles of the profession and one’s own convictions.
Self-development and lifelong learning	Pursues continuing development in one’s own skills and knowledge base to meet changing needs or challenges.
Flexibility	Demonstrates adaptability and resilience by staying optimistic and using a range of skills to handle challenges.
Communication skills	Communicates effectively in written and spoken methods, including listening to others effectively and making effective formal presentations.
Leadership skills	Motivates and influences others, including energizing, mobilizing, and empowering others to achieve important goals.
Coaching skills	Coaches and develops others, building skills, addressing their needs, and providing effective feedback.
Business skills	Is business oriented and understands resource management in meeting organizational goals.
Critical thinking	Uses sound judgment, making decisions on the basis of logic, evidence, experience, and accepted practice, seeking information when needed.
Creativity	Thinks innovatively to create or try new approaches to challenges.
Cultural competence	Demonstrates awareness of cultural sensitivity and cultural competency in public and private practice communications and settings.
Crisis and incident management	Is knowledgeable and able to apply principles of crisis management relevant to veterinary and public health practice.