

# Identifying Veterinary Students' Capacity for Moral Behavior Concerning Animal Ethics Issues

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## ABSTRACT

Veterinarians face unique animal ethics challenges as practitioners and policy advisors to government and industry. Changing societal attitudes, cultural diversity, and the often conflicting needs and interests of patients and clients contribute to moral distress. Yet little has been done to identify veterinarians' capacity to address these animal ethics issues. In this study, first-year and final-year veterinary students in an Australian university were surveyed to explore moral sensitivity, moral motivation, and moral character and their relationship with moral reasoning. The majority of students were concerned about animal ethics issues and had experienced moral distress in relation to the treatment of animals. Most believed that veterinarians should address the wider social issues of animal protection and that veterinary medicine should require a commitment to animals' interests over owners'/caregivers' interests. There was less agreement that the veterinary profession was sufficiently involved in addressing animal ethics issues. The principal motivators for studying veterinary medicine were, in declining importance, enjoyment in working with animals, helping sick and injured animals, and improving the way animals are treated. However, most students had taken little or no action to address animal ethics issues. These results suggest that both first- and fifth-year veterinary students are sensitive to animal ethics issues and are motivated to prioritize the interests of animals but have little experience in taking action to address these issues. Further research is needed to determine ways to identify and assess these moral behavior components in veterinary education to develop veterinarians' capacity to address animal ethics issues.

**Key words:** animal ethics, veterinary education, ethical sensitivity, moral reasoning, moral motivation, moral behavior

## INTRODUCTION

A fundamental ethical problem in veterinary medicine is whether veterinarians should give primary consideration to the animal or to the client.<sup>1</sup> Morton suggests that veterinarians have a special role as animals' advocates because "they have the knowledge base and required skills and commitment to fulfil this role; they have earned the confidence and respect of the constituents they serve; and they are the professionals to whom policy makers logically turn for guidance on animal health and welfare issues."<sup>2(p.107)</sup> Having the capacity to provide this ethical leadership is becoming increasingly important as animal ethics<sup>a</sup> is a growing concern of communities and policy makers internationally.

However, such ethical leadership is arguably often more difficult for veterinarians than for their human medical counterparts. Cultural and legal frameworks and economic imperatives may support the management of animals in a manner that is not conducive to animals' welfare or interests (e.g., battery cages for chickens). Animal care is often inconsistent, both within and across species (e.g., different standards for rabbits depending on their use by humans). This can create moral distress, which occurs "when one knows the right thing to do, but institu-

tional or other constraints make it difficult to pursue the desired course of action."<sup>3(p.30)</sup> Batchelor and McKeegan found that veterinary practitioners in the United Kingdom experience stressful ethical dilemmas regularly, with most reporting one or two ethical dilemmas weekly and one third of practitioners reporting three to five per week.<sup>4</sup> They also suggest that ethical sensitivity may determine the extent to which dilemmas are reported.

Ethics teaching in veterinary programs is relatively new but is growing internationally, albeit with considerable variation in what is taught and how.<sup>2,5,6</sup> A 2010 survey found no clear description of ethics competencies within the regulations for veterinary training in Europe.<sup>5</sup> In many professions, including veterinary science, ethics teaching aims to develop ethical behavior toward people. However, the extent to which veterinary programs develop ethical behavior toward animals is unknown, despite the treatment of animals being central to the veterinary role.

Based on morality literature, cognitive psychologist James Rest identified a Four Component Model (FCM) of moral behavior:

1. Moral sensitivity—interpreting the situation through awareness of how our actions affect others;

2. Moral judgment—determining which action is more morally justifiable;
3. Moral motivation—prioritizing moral values relative to other values;
4. Moral character—having courage and persistence, overcoming distractions, and implementing skills.<sup>7</sup>

According to Rest, these four components “comprise a logical analysis of what it takes to behave morally,” as “moral failure can occur because of deficiencies in any component.”<sup>7(p.24)</sup> As yet, little has been done to develop ethics programs that follow such logic through to assessing the ethical behavior that should ensue. Ethics programs often emphasize the development of the moral judgment component to address ethical dilemmas. However, the strength of association between moral judgment and action is low.<sup>8</sup> Thus, although moral judgment is a critical component “because it produces the moral meaning that an intended action has for the individual,”<sup>9(p.175)</sup> development of the other three components is also essential.

Although considerable research has been conducted in other professions to identify, develop, and assess these three moral components in relation to human ethics issues, particularly in dentistry,<sup>10</sup> little has been done in the veterinary profession. Some aspects of ethical sensitivity of veterinary students in relation to animal ethics have been investigated, such as students’ knowledge of animal sentience and empathy toward animals<sup>11</sup> and attitudes toward specific treatments of animals.<sup>12–14</sup> Similarly, students’ motivation to study veterinary medicine has been found to derive primarily from their attitudes toward animals.<sup>15</sup> No research has been done on the moral action of veterinary students.

This study investigates first- and final-year veterinary students’ perceptions of their moral sensitivity, moral motivation, and moral action as well as their confidence in moral decision-making skills. It also explores the relationship between these three components and their results on a new measure of moral judgment, the Veterinary Defining Issues Test (VetDIT).<sup>16</sup> Increased understanding of these four components of moral behavior in veterinary students will inform development of common animal ethics competencies, course content, and assessment tools for effective animal ethics education.

## MATERIALS AND METHODS

Ethics approval was obtained from the University of Queensland Behavioral and Social Sciences Ethical Review Committee to survey first-year and fifth-year veterinary students using a questionnaire developed by the researchers. The questionnaire contained 25 items on animal ethics issues (available from the corresponding author, JMV, on request):

1. Eight items related to moral sensitivity, specifically whether students
  - are concerned about how animals are treated in the general Australian community;
  - can identify specific animal ethics issues of concern;
  - experience moral distress;

- have knowledge and understanding of
    - animals’ physical characteristics,
    - animals’ emotional characteristics, and
    - ethical frameworks and principles;
  - agree that veterinarians face difficulties in protecting animals’ interests; and
  - can identify specific difficulties veterinarians face in acting to protect animals’ interests.
2. Twelve items related to moral motivation, specifically whether
    - the primary focus as a veterinarian should be the interests of the animals in his/her care;
    - veterinarians should be involved in the wider social issues of animal protection;
    - veterinary medicine should require a commitment to animals’ interests over the interests of their owners/caregivers;
    - the veterinary profession should be involved in addressing animal ethics issues in the wider community;
    - the veterinary profession is sufficiently involved in addressing animal ethics issues;
    - knowledge and skills to address animal ethics issues should be taught in the veterinary program;
    - their university provides an environment that supports students to discuss and resolve animal ethics issues/conflicts/dilemmas;
    - their university culture shows an interest in improving
      - animal health,
      - animal production, and
      - how animals are treated in the Australian community;
    - students can identify ways that their university has shown an interest/involvement in improving the way animals are treated in the Australian community; and
    - students were motivated to study veterinary science to improve the way animals are treated.
  3. One item related to moral judgment, specifically whether
    - students believed they were competent in ethical decision-making skills to guide moral judgment on animal ethics issues.
  4. Four items related to moral character, specifically whether
    - students had acted to resolve animal ethics issues, conflicts, and dilemmas;
    - these issues, conflicts, and dilemmas had been resolved; and
    - students had acted to improve how animals are treated in the wider Australian community.
    - In addition, students listed specific actions they had taken to improve how animals are treated in the wider community.

Respondents were asked to rate their level of agreement on a 5-point scale, from 1 = *strongly agree* to 5 = *strongly disagree*. In addition, the extent of actions was rated on scales from 1 = *very great extent* to 5 = *never* or 1 = *a great*

deal to 5 = nothing. A scale of 1 = yes, 2 = partly, and 3 = no was used to measure whether ethical issues had been resolved. To determine if ethical motivators for choosing to study veterinary science were important, students selected and ranked their top three motivators from a list of 13 and were able to provide other motivators that were not listed. Open-ended questions were used to identify specific ethical issues students were concerned about, actions taken by students to improve how animals are treated, difficulties faced by veterinarians in protecting animals' interests, and ways that their university shows an interest or involvement in improving how animals are treated in the Australian community. Basic demographic information was also gathered: gender, age, previous university degrees, whether English was their primary language, and self-evaluated experience (from 1 = very great extent to 5 = never) with three animal types: companion animals, farm animals, and horses.

The questionnaire was completed by 148 veterinary students from three cohorts: 60 first-year students (49% of the cohort) in 2012, 53 fifth-year students (47% of the cohort) in 2013, and 35 fifth-year students (35% of the cohort) in 2014. All groups were convenience samples of students attending a scheduled teaching session in one of their veterinary courses at the University of Queensland. In relation to formal animal ethics study, the first-year students completed the VetDIT, then had a lecture on ethical theory in relation to animal use, and then, one week later, completed this survey, all in their second-semester Animal Handling, Behavior and Welfare course. The 2013 fifth-year students had received two 1-hour lectures on ethical theory applied to animals and the application of ethics to a current ethical issue, in their first and third years, respectively. This questionnaire was completed at the beginning of their fifth and final year after some had completed the VetDIT and all had completed a lecture on animal ethics within a professional practice subject. The 2014 fifth-year students were attending 1 week of professional practice workshops in the middle of their final year of work placements and had a similar background in ethics teaching as the 2013 fifth-year students. Students completed the questionnaire in 20 minutes, either on paper or online using the University's Blackboard software.<sup>b</sup> Participation was voluntary and anonymous. To enable comparisons with other questionnaires on moral judgment and with responses in future years, students were given a formula to record a unique identifying code.

Of those who had completed the survey, 48 first-year students (39% of the cohort) and 36 fifth-year students from 2013 (33% of the cohort) also completed the VetDIT Version 1.<sup>16</sup> This test, based on Rest's adaptation of Kohlberg's stages of moral reasoning development, assesses their levels of moral judgment on three new animal ethics issues and three previously validated and well-used human ethics issues. The levels of moral judgment include:

- Personal Interest (PI)—recognition of authority and reciprocal relationships that result in reward or punishment;
- Maintaining Norms (MN)—maintaining social laws and norms and abiding by existing expectations in rules and regulations set by governments or groups;

- Postconventional, here identified as Universal Principles (UP)—emphasizing the primacy of moral ideals that are constructive, sharable, and not self-serving at the expense of others.<sup>17</sup>

Student scores for the different levels of reasoning in the VetDIT study are used here to explore relationships between moral judgment development and the other moral components in the FCM.

## Statistical Analysis

The statistical program Minitab 16<sup>c</sup> was used for data analysis. Spearman rank correlations were used to identify relationships in the animal ethics issues questionnaire as the responses were not normally distributed according to the Anderson-Darling test. Spearman rank correlations were also used to identify relationships between the animal ethics issues responses and the VetDIT variables. The effect of demographic variables on animal ethics issues' categorical variables was tested by ordinal logistic regression with the logit function.

## RESULTS

### Student Demographics

For the 148 students, ages ranged from 17 to 44, with the majority between 17 and 24 ( $n = 114$ ; 77%) and female ( $n = 123$ ; 84%). A total of 30 students (20%) had a previous degree, but this had no significant ( $p > .050$ ) influence on responses. A total of 121 (83%) indicated that English was their primary language. The majority of students claimed a very great extent ( $n = 84$ ; 57%) or a great extent ( $n = 41$ ; 28%) of experience with companion animals but experience with farm animals was much less, with the majority acknowledging some ( $n = 56$ ; 38%) or little ( $n = 49$ ; 33%) experience. In relation to horses, 34 (23%) students had a very great or great extent of experience, while 47 (32%) had some experience and 56 (38%) had little experience.

### Moral Sensitivity

Most respondents (137, 93%) agreed that they were concerned about animal ethics issues in relation to how animals are treated in the general Australian community (Table 1). Specific issues of concern were identified by 28 first-year students (47% of the cohort) and 61 fifth-year students (70% of the cohort). The issues identified most often by first-year students related to animal farming (36, 69%), followed by companion animal issues (13, 25%), with the reverse true for fifth-year students (46 [31%] and 73 [50%], respectively). Most students (102, 69%) also indicated that they had experienced moral distress (Table 1). There was a positive correlation between concern about animal ethics issues and experiencing moral distress (correlation coefficient [CC] 0.29;  $p < .001$ ). Students for whom English was not their primary language were less strongly concerned about how animals are treated in the wider Australian community and were more uncertain that they had experienced moral distress (Table 2).

In terms of having the knowledge to identify ethical issues, most (100, 68%) agreed that they had knowledge

**Table 1:** Responses of first- and fifth-year students to questions about their ethical sensitivity, on a scale of 1 (*strongly agree*) to 5 (*strongly disagree*)

Question number and statement	Ethical sensitivity				
	1 No. (%)	2 No. (%)	3 No. (%)	4 No. (%)	5 No. (%)
1. Ethical issues, conflicts, and dilemmas in relation to how animals are treated in the general Australian community are a concern for me.	78(53)	59(40)	5(3)	4(3)	1(1)
2. I have experienced moral distress in relation to the treatment of animals.	27(18)	75(51)	28(19)	16(11)	2(1)
3. I have knowledge and understanding of the range of ethical frameworks and principles on which animal ethics is based.	13(9)	87(59)	35(24)	10(7)	3(2)
4. I have knowledge and understanding of different species' physical characteristics.	35(24)	90(61)	17(11)	6(4)	0(0)
5. I have knowledge and understanding of different species' mental and emotional characteristics.	11(7)	77(52)	48(32)	10(7)	2(1)
6. Veterinarians face difficulties in protecting animals' interests.	63(43)	70(48)	12(8)	2(1)	0(0)

**Table 2:** Significant ( $p \leq .050$ ) demographic effects on mean level of agreement, on a scale of 1 (*strongly agree*) to 5 (*strongly disagree*), for questions about ethical sensitivity (see Table 1 for questions)

Question number	Demographic effect	Mean 1	Mean 2	OR	Lower CI	Upper CI	p value
1	Language*	1.50	1.88	0.36	0.15	0.88	.026
2	Language*	2.15	2.64	0.36	0.16	0.85	.019
4	Language*	1.87	2.32	0.28	0.11	0.73	.009
4	Year level†	2.25	1.76	3.85	1.73	8.54	.001
5	Year level†	2.77	2.19	4.17	2.00	8.70	<.001
5	Language*	2.38	2.64	0.41	0.17	0.99	.048
5	Experience with horses‡	1 = 2.33 2 = 2.19 3 = 2.15 4 = 2.64 5 = 3.10		0.61	0.42	0.89	.011
6	Language*	1.6	2.0	0.25	0.10	0.62	.003
6	Experience with farm animals§	2 = 1.76 3 = 1.61 4 = 1.61		1.61	1.02	2.53	.040

\* 1 = English is primary language; 2 = English is not primary language

† 1 = first year; 2 = fifth year

‡ 1 = very great extent; 5 = never

§ 2 = great extent; 4 = minimal extent (values for 1 and 5 have been ignored as < 10 students responded in these categories)

and understanding of a range of the ethical frameworks and principles on which animal ethics is based (Table 1), with 24% being unsure. More students agreed that they had knowledge and understanding of different species' physical characteristics (125, 85%) than mental and emotional characteristics (88, 59%). Fifth-year students were more confident than first-year students regarding their knowledge of both physical and mental/emotional characteristics (Table 2). Students for whom English was not their primary language agreed less that they had know-

ledge of animals' physical and mental/emotional characteristics. Students with no experience with horses agreed less that they had knowledge of mental/emotional characteristics than those with experience. There was a positive correlation between knowledge of physical characteristics and both concern for ethics issues (CC 0.18;  $p = .026$ ) and experiencing moral distress (CC 0.23;  $p = .005$ ).

Nearly all respondents (133, 91%) agreed that veterinarians face difficulties in protecting animals' interests, a belief that was correlated with experiencing moral dis-

**Table 3:** Responses of 148 first- and fifth-year students to questions about their ethical motivation and moral judgment capacity, on a scale of 1 (*strongly agree*) to 5 (*strongly disagree*)

Question number and statement	Agreement level				
	1 No. (%)	2 No. (%)	3 No. (%)	4 No. (%)	5 No. (%)
7. My primary focus as a veterinarian should be the interests of all animals in my care.	104(70)	39(26)	3(2)	1(1)	1(1)
8. As a veterinarian I should be involved in the wider social issues of animal protection.	69(47)	72(49)	4(3)	3(2)	0(0)
9. Veterinary medicine should require a commitment to animals' interests over the interests of their owners/caregivers.	48(32)	58(39)	28(19)	13(9)	1(1)
10. The veterinary profession should be involved in addressing animal ethics issues in the wider community.	63(43)	76(51)	5(3)	4(3)	0(0)
11. The veterinary profession is sufficiently involved in addressing animal ethics issues in the wider community.	11(7)	39(26)	73(49)	24(16)	1(1)
12. Knowledge and skills to address animal ethics issues should be taught in the veterinary program.	72(49)	66(45)	6(4)	2(1)	1(1)
13. My university provides an environment that supports students to discuss and resolve animal ethics issues, conflicts, and dilemmas related to how animals are treated.	34(23)	77(52)	29(20)	8(5)	0(0)
14. My university culture shows an interest in improving animal health.	61(42)	74(51)	10(7)	1(1)	0(0)
15. My university culture shows an interest in improving animal production.	49(33)	86(58)	10(7)	2(1)	0(0)
16. My university culture shows an interest in improving how animals are treated in the Australian community (i.e., to improve their well-being—capacities for pleasure and fulfillment and avoidance of pain, distress, and death).	47(32)	78(53)	20(14)	2(1)	0(0)
17. I am competent in ethical decision-making skills to guide moral judgment on animal ethics issues.	11(7)	56(38)	68(46)	10(7)	3(2)

stress ( $CC\ 0.25; p = .003$ ). Students for whom English was not their primary language had less strong agreement. Those who had more experience with farm animals had less strong agreement that veterinarians face difficulties in protecting animals' interests. When asked to specify the main difficulties, first-year students, more often than fifth-year students, mentioned conflict between animals' and clients' interests, with the law supporting the client's interests (26 [39%] first-year students, compared with 27 [20%] fifth-year students). The fifth-year students more often raised financial constraints as a main difficulty than did first-year students (39 [30%] fifth-year students, compared with 15 [23%] first-year students). A significant proportion (21, 16%) of fifth-year students (but almost no first-year students [3, 5%]) also listed clients' lack of cooperation with veterinarians' instructions as a difficulty.

### Moral Motivation

The majority of students strongly agreed that the primary focus of a veterinarian should be the interests of the animals in their care (Table 3). Male students were less strongly in agreement than female students (Table 4). The majority of students also agreed, though less strongly, that veterinarians should be involved in the wider social issues of animal protection and that veterinary medicine

should require a commitment to animals' interests over the interests of their owners or caregivers (Table 3). First-year students agreed with this statement more than fifth-year students (Table 4). Students with greater experience with companion animals also more strongly agreed that veterinary medicine should require a commitment to animals' interests over the interests of their owners or caregivers, and students with greater experience with farm animals indicated less agreement. While the majority ( $n = 139; 93\%$ ) agreed that the veterinary profession should be involved in addressing animal ethics issues in the wider community, almost half of the students were unsure and 17% disagreed that the veterinary profession was sufficiently involved. Agreement that the veterinary profession should be involved in addressing animal ethics issues in the community (Question 10) was the only one of these professional motivation questions that was correlated with students' perceived knowledge and understanding of ethical frameworks and principles ( $CC\ 0.16; p = .047$ ), different species' physical characteristics ( $CC\ 0.21; p = .010$ ), and different species' mental and emotional characteristics ( $CC\ 0.22; p = .007$ ).

There was a positive correlation between students' agreement that the treatment of animals in the general Australian community is a concern and agreement that

**Table 4:** Significant ( $p \leq .05$ ) demographic effects on mean level of agreement, on a scale of 1 (*strongly agree*) to 5 (*strongly disagree*), for questions about ethical motivation and moral judgment capacity (see Table 3 for questions)

Question number	Demographic effects	Mean 1	Mean 2	OR	Lower CI	Upper CI	$p$ value
7	Sex*	1.54	1.31	2.76	1.09	6.98	.032
9	Year level <sup>†</sup>	1.82	2.23	0.46	0.23	0.91	.025
9	Experience with companion animals <sup>‡</sup>	1 = 2.00 2 = 2.05 3 = 2.00 4 = 2.33 5 = 2.83		0.64	0.46	0.88	.006
9	Experience with farm animals <sup>‡</sup>	1 = 2.55 2 = 2.27 3 = 2.16 4 = 1.75 5 = 1.85		1.78	1.16	2.73	.008
14	Year level <sup>†</sup>	1.84	1.55	2.17	1.05	4.46	.036
16	Year level <sup>†</sup>	2.05	1.70	2.39	1.17	4.88	.016
17	Sex*	2.25	2.65	0.28	0.12	0.68	.005

\* 1 = male; 2 = female

<sup>†</sup> 1 = first year; 2 = fifth year

<sup>‡</sup> 1 = very great extent; 5 = never

(a) as veterinarians, they should be involved in wider social issues of animal protection (CC 0.19;  $p = .020$ ); (b) veterinary medicine should require commitment to animals' interests over the interests of their owners or caregivers (CC 0.19;  $p = .020$ ); and (c) the profession should be involved in addressing animal ethics issues in the wider community (CC 0.26;  $p = .001$ ). These three beliefs were also positively correlated with experiencing moral distress (respectively, CC 0.16,  $p = .045$ ; CC 0.15,  $p = .070$ ; and CC 0.21,  $p = .011$ ).

Nearly all students agreed that knowledge and skills to address animal ethics issues should be taught in the veterinary program (Table 3). This belief was correlated with students' concern about animal ethics issues (CC 0.17;  $p = .039$ ) and their belief that (a) the primary focus as veterinarians should be the interests of all animals in their care (CC 0.40;  $p < .001$ ), (b) veterinarians should be involved in the wider social issues of animal protection (CC 0.43;  $p < .001$ ), (c) veterinary medicine should require a commitment to animals' interests over the interests of their owners or caregivers (CC 0.30;  $p < .001$ ), (d) the veterinary profession should be involved in addressing animal ethics issues in the wider community (CC 0.42;  $p < .001$ ), and (e) veterinarians face difficulties in protecting animals' interests (CC 0.21;  $p = .010$ ).

#### Motivation for Choosing to Study Veterinary Science

The main motivators for studying veterinary science were enjoyment in working with animals and to help sick or injured animals (Table 5). The third most important motivator, though considerably less so, was to improve the way animals are treated. No students were primarily motivated by financial reward or because family or friends worked with animals. When each student's three highest motivators were combined, over

80% included enjoyment in working with animals, 70% wished to help sick or injured animals, and 38% wished to improve the way animals are treated. Of similar importance to the latter were an interest in science (34%) and enjoyment in using practical hands-on skills (27%; Table 5).

#### University Culture

The majority of students agreed that their university provided an environment that supports students to discuss and resolve animal ethics issues, conflicts, and dilemmas related to how animals are treated (Table 3). Students mostly agreed that their university culture showed an interest in improving animal health and animal production (93%), followed by an interest in improving how animals are treated in the Australian community (85%). First-year students showed less agreement than fifth-year students (Table 4). There was a correlation between levels of agreement that the veterinary profession was sufficiently involved in addressing animal ethics issues in the wider community and agreement that the university culture showed an interest in improving animal health (CC 0.20;  $p = .017$ ), animal production (CC 0.25;  $p = .002$ ), and how animals are treated in the Australian community (CC 0.19;  $p = .019$ ). Over half of first-year students (57%) and two thirds of fifth-year students (68%) listed ways that they believed the university showed interest or involvement in improving animals' interests in the Australian community (Table 6).

#### Moral Action

Of the students who were concerned about ethical issues (Question 1), most ( $n = 70$ , 54%) perceived that they had done little or nothing to resolve them and only 8 (6%)

**Table 5:** Number and percentage of 144 respondents who rated each motivator as their primary reason for studying veterinary science (in order of declining importance) and as one of their top three motivators

Motivator	Primary motivator No. (%)	Motivator in the top three No. (%)
Enjoyment in working with animals	57(39.6)	117(81.15)
Helping sick and injured animals	50(34.7)	101(70.27)
Improving the ways animals are treated	10(6.9)	55(38.46)
Interest in science	7(4.9)	49(34.27)
Using practical hands-on skills	5(3.5)	48(26.69)
Becoming part of a valued profession	3(2.1)	21(14.79)
Wanting a physical outdoor job	3(2.1)	18(12.7)
Farming background	2(1.4)	9(6.3)
Developing a profitable animal industry	2(1.4)	3(2.07)
Good job security	2(1.4)	5(3.5)
One of the hardest programs to get into	1(0.7)	4(2.83)
Other	2(1.4)	7(5.0)
Family or friends work with animals	0(0)	5(3.45)
Financially rewarding job	0(0)	3(2.08)

**Table 6:** Number of specific observations on how their university shows interest/involvement in improving how animals are treated in the Australian community (in order of frequency) by first-year ( $n = 34$ ; 57%) and fifth-year ( $n = 60$ ; 68%) survey respondents

University interest/involvement	First year No.	Fifth year No.	Total No.
Animal welfare teaching	7	14	21
Small Animal Center/adoption program/Pets for Life program	4	14	18
Animal ethics teaching	8	6	14
Research—staff publications	5	5	10
Lunch time guest speaker presentations	2	6	8
Funding for school centers (Animal Welfare and Ethics and Companion Animal Health)	—	5	5
Involvement in fundraising and awareness campaigns	4	1	5
Animal handling courses	4	1	5
Lecturers encouraging discussion	—	4	4
University clinic	—	3	3
Clinical Studies Centre	2	1	3
Other (single comments)	7	14	21
No response	26	28	54

perceived that they had done a lot or a great deal (Table 7). Of the 83 students who indicated that they had taken action to resolve these concerns (60% of those with ethical concerns), more than half ( $n = 48$ ; 58%) indicated that these issues had not been resolved and one third indicated that their issues had been partly resolved.

Apart from acting to resolve their own ethical concerns, conflicts, or dilemmas, students also indicated the extent to which they had personally acted to improve the treatment of animals in the wider community. Most students had acted to a minimal extent or no extent (Table 7). A total of 97 students (66%) listed specific actions that they had undertaken (Table 8). Most actions (55%)

were related to companion animal issues, 9% to farm animal issues, and 3% to wildlife issues, and 33% were general actions including signing petitions, fundraising, studying, and researching.

There were positive correlations between levels of moral distress and (a) action by students to resolve animal ethics issues they were concerned about ( $CC\ 0.27$ ;  $p = .001$ ) and (b) personal action to improve how animals are treated in the wider community ( $CC\ 0.24$ ;  $p = .003$ ). There was a negative correlation ( $CC\ -0.19$ ;  $p = .028$ ) between action to resolve animal ethics issues and agreement that the university environment supported students to resolve animal ethics issues. Thus students who had done more

**Table 7:** Ethical actions taken by 130 respondents who agreed that they were concerned about ethical issues (Question 1) and 83 respondents who had taken action to resolve these concerns (Question 18)

Question number and statement	Ethical action taken					
	No. (%)					
22. How much have you done to resolve these animal ethics issues, conflicts, or dilemmas?	A great deal 3(2)	A lot 5(4)	Some 37(28)	Little 38(29)	Nothing 32(25)	N/A 15(12)
23. Have these issues, conflicts, or dilemmas been resolved? (for Question 18 affirmative respondents)	Yes 3(4)	Partly 27(33)	No 48(58)	– –	– –	NA 5(6)
24. To what extent have you personally acted to improve how animals are treated in the wider community?	Very great extent 2(1)	Great extent 5(3)	Some extent 65(45)	Minimal extent 52(36)	Never 22(15)	– –

to resolve animal ethics issues were less likely to agree that the university provided an environment that supports students to discuss and resolve animal ethics issues, conflicts, and dilemmas. There were also positive correlations between action to improve the way animals are treated in the wider community and perceived knowledge and understanding of ethical frameworks and principles (CC 0.20,  $p = .014$ ), ethical decision-making skills (CC 0.19,  $p = .020$ ), and animals' mental and emotional characteristics (CC 0.24,  $p = .004$ ), though not physical characteristics ( $p > .050$ ).

### Moral Judgment

Almost half of the students ( $n = 67$ , 45%) agreed that they were competent in ethical decision-making skills to guide judgment on what action should be taken on animal ethics issues; 68 students (46%) were unsure (Table 3). More males than females believed they were competent (mean male 2.25; mean female 2.65; OR 0.28; CI 0.12–0.68;  $p = .005$ ).

### Correlations Between Animal Ethics Issues Variables and Moral Judgment Scores

There were significant correlations between responses to animal ethics issues and students' scores on the VetDIT. Veterinary students who had higher levels of Personal Interest (PI) reasoning on human ethics issues were more likely to

- experience moral distress (CC  $-0.31$ ;  $p = .004$ ) and
- have acted to resolve their concerns regarding the way animals are treated (CC  $-0.27$ ;  $p = .019$ ).

Students with higher levels of PI reasoning on animal ethics issues were less likely to agree that

- the veterinary profession should be involved in addressing animal ethics issues in the wider community (CC .32;  $p = .003$ ),

- they had knowledge and understanding of different species' physical characteristics (CC 0.28;  $p = .011$ ), and
- their university provides an environment that supports students to discuss and resolve animal ethics issues (CC 0.24;  $p = .029$ ).

Students with higher levels of Maintaining Norms (MN) reasoning on human ethics issues were less likely to

- have experienced moral distress (CC 0.24;  $p = .028$ ),
- have the interests of the animals in their care as their primary focus (CC 0.44;  $p < .001$ ),
- agree that veterinarians should be involved in the wider social issues of animal protection (CC 0.41;  $p < .001$ ),
- put animal interests above those of their owners or caregivers (CC 0.27;  $p = .013$ ), and
- agree that the veterinary profession should be involved in addressing animal ethics issues in the wider community (CC 0.32;  $p = .003$ ).

Students with higher levels of MN reasoning on animal ethics issues were more likely to agree that

- the veterinary profession is sufficiently involved in addressing animal ethics issues in the wider community (CC 0.30;  $p = .005$ ) and
- their university provides an environment that supports students to discuss and resolve animal ethics issues, conflicts, or dilemmas in relation to how animals are treated (CC  $-0.25$ ;  $p = .022$ ).

Students with higher levels of Universal Principles (UP) reasoning on human ethics issues were more likely to

- agree that animals' interests are their primary focus as veterinarians (CC  $-0.35$ ;  $p = .001$ ),
- commit to animals' interests over those of their owners or caregivers (CC  $-0.24$ ;  $p = .028$ ),



**Table 8:** Actions taken by first-year ( $n = 35$ ; 58%) and fifth-year ( $n = 62$ ; 70%) students (total = 97; 66%) to improve how animals are treated in the wider community and number of times mentioned

Actions by animal use type	First year No.	Fifth year No.	Total No.
<b>Helping abandoned companion animals:</b>			
Volunteer at an animal shelter	11	10	21
Donate to an animal shelter	3	9	12
Advocate spaying	–	4	4
Rehome an abandoned animal	–	3	3
Help clinics rehome animals	–	2	2
Other single actions	5	1	6
Subtotal	19	30	49
<b>Helping owned companion animals:</b>			
Advise family and friends	5	6	11
Help clients within work experience	2	9	11
Work as a veterinary nurse	2	1	3
Other	2	3	5
Subtotal	11	19	30
Total companion animals	30	49	79
<b>Helping farmed animals</b>			
Buy products for better welfare	2	4	6
Educate fellow workers	–	4	4
Other	4	1	5
Total farmed animals	6	7	13
<b>Helping wildlife</b>			
Join wildlife caregivers	1	–	1
Educate the public about snakes, avian, and exotic species, petition to protect sharks	–	2	2
Sign petition about sharks	–	1	1
Total wildlife	1	3	4
<b>General</b>			
Educate family, friends, etc. about animal issues	2	11	13
Sign petitions	6	5	11
Fundraise	3	2	5
Write letters, emails, etc.	–	3	3
Support animal welfare organizations	2	2	4
Total general actions	17	30	47
<b>TOTAL ACTIONS</b>	<b>54</b>	<b>89</b>	<b>143</b>
Not sure	1	–	1
Nil/NA/Unanswered	24	26	50

- agree that they and the veterinary profession should be involved in addressing animal ethics issues in the community (respectively,  $CC -0.24$ ,  $p = .028$  and  $CC -0.27$ ,  $p = .015$ ), and
- perceive that they had done less to resolve animal ethics issues ( $CC 0.27$ ;  $p = .018$ ).

Students with higher levels of UP reasoning on animal ethics issues were more likely to

- be strongly concerned about how animals are treated in the general Australian community ( $CC -0.22$ ;  $p = .047$ ),

- perceive they had knowledge of different species' mental and emotional characteristics ( $CC -0.23$ ;  $p = .038$ ), and
- strongly agree that the veterinary profession should be involved in addressing animal ethics issues in the wider community ( $CC -0.31$ ;  $p = .004$ ).

## DISCUSSION

This study suggests that veterinarians have substantial ethical capacities to address animal ethics issues, conflicts, and dilemmas and have some significant capacities for development.

## Moral Sensitivity

The finding that half of both first-year and final-year cohorts expressed strong concern for animal ethics issues suggests that moral sensitivity is being maintained throughout veterinary training. Most had experienced moral distress about the ways animals are treated in the Australian community. That more fifth-year students were able to identify a greater range of issues than first-year students was expected. The greater concern for companion animal issues by fifth-year students, compared to the predominant concern for farm animal issues among first-year students, suggests that universities have the capacity to direct students' ethical concerns by, in this case, possibly placing greater emphasis during the veterinary program on addressing companion animal, rather than farm animal, issues. This premise is supported by the fifth-year students' frequent listing of the Small Animal Center's adoption and Pets for Life programs as evidence of the university showing an interest in improving how companion animals are treated.

Research in dentistry suggests that ethical sensitivity is distinct from moral reasoning abilities and that students and practitioners vary greatly in their ability to recognize the ethical problems of their profession. However, ethical sensitivity can be enhanced through instruction and reliably assessed.<sup>18</sup> This study focused on students' ability to identify their own animal ethics concerns rather than being prompted by given scenarios or specific issues. However, development of an ethical sensitivity measure, such as Bebeau's Dental Ethical Sensitivity Test<sup>18</sup> and Brabeck et al.'s Racial Ethical Sensitivity Test,<sup>19</sup> in which students interpret a situation involving an animal ethics issue, could follow from our research. A variety of ethical sensitivity elements, including interpreting others' reactions and feelings, showing empathy and role-taking ability,<sup>20</sup> making inferences from others' behavior and responding appropriately to their reactions,<sup>17,19</sup> and understanding how one's actions can affect the welfare and expectations of both oneself and others,<sup>21</sup> could be assessed in relation to animal ethics issues.

### *Knowledge and Skills in Animal Ethics*

More veterinary students perceived that they had knowledge and understanding of different species' physical rather than mental and emotional characteristics, both in first and final years of the veterinary program. Knowledge of animals' mental and emotional characteristics may be significant in affecting moral sensitivity toward animals and inconsistencies in their treatment. Adelman identified a relationship between belief in animal mind and empathy toward animals, although the relationship may be mediated by conflicting instrumental motivations, given that, for farmers, empathy was more reliably predicted by instrumentality than by a belief in animal mind.<sup>22</sup> Opatow found that a person's scope of justice is modified by the perceived utility of the animal and by how severe the conflict of interest is between animals and humans in particular situations and not by recognizing similar qualities to oneself.<sup>23</sup> It would therefore seem vital to give students the opportunity to "learn to think more

reflectively and systematically about the ethical impact of life-decisions as well as about everyday practice"<sup>24(p.15)</sup> based on what is known or yet to be determined about animals' minds. Students who showed greater agreement that they had knowledge of ethical frameworks and principles and of animals' mental/emotional capabilities in this study were more likely to have acted to address animal ethics issues, suggesting the importance of this knowledge.

Other studies have suggested that knowledge of animals' mental and emotional capabilities is not being addressed sufficiently in veterinary education. A 2005 study at one US university involving veterinary students across all four year levels found that students were more likely to believe that dogs and cats had thought processes and emotional abilities than farm animals, particularly poultry, with less than half the students believing that poultry were capable of thought processes. Veterinary students were also more likely to consider hot branding inhumane for dogs and cats than for cows and pigs. Students aspiring to work with small animals were more likely to consider procedures inhumane for all species, except for cats, than students aspiring to work with food animals.<sup>25</sup>

## Moral Motivation

This study suggests that the majority of veterinary students not only believed that their primary focus should be the interests of the animals in their care, but that their role extended to addressing the wider social issues of animal protection. The relationship between moral distress and a belief that animals' interests should be given priority is supported by previous research that showed British veterinarians regularly experience stress when animals' interests are not respected (e.g., healthy animal euthanasia, financial limitations on treatment, and clients wanting to continue unwarranted treatment). Most (78%) of these veterinary practitioners felt they had inadequate ethics training during their veterinary degree.<sup>4</sup>

Such education deficiencies may contribute to the veterinary profession being less proactive in addressing animal ethics issues than current veterinary students would like. While over 90% of students believed that the veterinary profession should be involved in addressing animal ethics issues in the wider community, only one third agreed that it was sufficiently involved. If the veterinary profession had a high public profile in addressing animal ethics issues, this would most likely have been recognized. Developing the capacity for the veterinarian profession to be more involved in addressing animal ethics issues in the wider community is therefore an important priority for ethics education to prevent practitioners' moral distress.

Students were mainly motivated to study veterinary science because they enjoyed working with animals and wanted to help sick and injured animals, indicating that physical contact with animals is a primary motivator. While helping sick and injured animals is an ethical motivation, it is a largely reactive one. However, the third highest motivator was to improve the way animals are treated, an ethical motivation that has the potential to be

more proactive by preventing suffering and loss of life. Although only 7% indicated this was their primary motivator, 38% included it in their top three motivators, suggesting that a significant proportion of students may be interested in post-graduate programs to develop more advanced ethical knowledge and skills for holding advisory roles on animal ethics committees and for providing ethical leadership in government and industry to both address and prevent animal ethics conflicts.

### *University Culture*

Organizational culture is important in ethical development.<sup>26</sup> For example, liberal arts college environments are more conducive to fostering the development of moral reasoning than other types of colleges and universities.<sup>27</sup> Students in this study who had acted to resolve ethical issues were in the minority. These students felt less supported by their university culture to discuss and resolve animal ethics concerns than students who had taken no action. This suggests that veterinary science schools may need to consider how they support concerned students and ethical behavior.

### **Moral Action**

While concern for animal ethics issues and professional motivation were both strong, very few students had taken action to address their concerns or to improve the treatment of animals in the wider community. Other studies have shown that intentions do not necessarily translate into action. A study of 258 students in 59 clinical psychology programs found that only 37% of students who identified the appropriate response (according to the American Psychological Association's Ethics Code) to an ethical dilemma said that they would actually do what they believed they should do.<sup>28</sup> The theory of planned behavior attempts to account for the formation of intentions and the achievement of behavioral goals: "People intend to perform a behaviour when they evaluate it positively, when they experience social pressure to perform it, and when they believe that they have the means and opportunities to do so."<sup>29</sup>(p.118) As well, "psychological toughness and strong character do not guarantee adequacy in any of the other components [of moral behavior,] but a certain amount of each is necessary to carry out a line of action."<sup>7</sup>(p.24) This suggests that universities have an important role to play in teaching and facilitating conversion of intentions into actions by giving students the encouragement, means, and opportunities during their program to take action to address animal ethics issues and to build the psychological toughness needed to persist in pursuing an ethical outcome.

The positive correlation between moral distress and action to resolve concerns suggests that moral distress could be a motivator for action or that taking action increases moral distress due to legal and organizational difficulties that the majority of students agreed veterinarians face in protecting animals' interests. Regardless, it would seem important for veterinary students, and the profession as a whole, to develop skills in ethical action to be able to address these difficulties and reduce moral distress.

### **Demographic Differences in Moral Sensitivity, Motivation, and Action**

Complementing research in which the year of study was not significantly related to British veterinary students' self-reported empathy with animals,<sup>11</sup> there were no significant differences in moral sensitivity between students in their first and fifth (final) year in our study, with both groups indicating strong concern and moral distress related to animal ethics issues. However, in relation to ethical motivation, although both cohorts were similarly in agreement that veterinarians, and the profession as a whole, should be involved in addressing animal ethics issues in the wider community, fifth-year students indicated less motivation to prioritize animals' interests over the interests of their owners or caregivers. This may be due to their impending recruitment into the workforce or it could be a cohort effect. Fifth-year students were no different from first-year students in the extent of action they had taken to address animal ethics issues, which means that they are likely to enter the workforce with few skills and little experience to address the ethical concerns that are common in veterinary practice. Similarly, while fifth-year students indicated more knowledge of the physical, mental, and emotional characteristics of animals than first-year students, there was no difference in perceived knowledge and understanding of ethical frameworks and principles or competence in ethical decision-making skills, suggesting room for growth in these areas in the curriculum.

Veterinary students from non-English speaking backgrounds reported less concern about how animals are treated in the general Australian community and more uncertainty as to whether they had experienced moral distress. This may be because of their reported lesser knowledge and understanding of animals' physical and mental/emotional characteristics or it could suggest a lack of experience in the Australian community, cultural differences in openly claiming knowledge, or differences in actual levels of concern. Cultural differences regarding levels of concern for animal welfare have been previously identified in veterinary students.<sup>14</sup>

The absence of gender differences in our study appears to conflict with research that shows that female veterinary students express more concern for animal welfare than male veterinary students in Australia<sup>13,14</sup> and in the UK<sup>11</sup> and that female first-year students in the US agree more than male students that a veterinarian's first responsibility is to the animal when the animal's interests and the owner's wishes conflict.<sup>12</sup> However, our study had a broader scope and was not focused on specific animal welfare and rights issues. Research in human ethics issues has shown female students to be only marginally more ethically sensitive than male students<sup>18</sup> and only on some issues.<sup>30</sup> Our male students did show less strong agreement than female students that their primary focus was the interests of animals in their care but more confidence that they were competent in ethical decision-making skills.

Companion animal experience appears to engender commitment to animals' interests over those of their

owners or caregivers, whereas farm animal experience has the opposite effect, which possibly explains why those with more farm animal experience believed less that veterinarians face difficulties protecting animals' interests. Experience with horses seems to engender greater knowledge of animals' physical and mental/emotional characteristics, which may be because of the strong horse-owner bond.

### Relationships Between Moral Judgment and Moral Sensitivity, Motivation, and Action

Evidence from studies on the independence of moral judgment, sensitivity, motivation, and action show low to very low correlations between ethical sensitivity and moral judgment and very low to an occasional/moderate correlation among the other components.<sup>10</sup> This study shows some relationships between moral judgment levels as identified in the VetDIT and students' perceptions of the other three components. For example, students with higher levels of PI reasoning were more likely to experience moral distress. Providing opportunities to reflect on moral judgment development theory to build capacity for moral judgment may reduce moral distress. Students with high levels of MN reasoning were less likely to experience moral distress but were less interested in being involved in animal issues. Development of ethical sensitivity and awareness of UP reasoning may help motivate these students to address the animal ethics issues that veterinarians inevitably face as a result of accepting norms. Students with higher levels of UP reasoning showed more sensitivity and motivation to address animal ethics issues and to give priority to animals' interests in their professional role. That these students perceived they had done less to address animal ethics issues may be due to their greater awareness of the number and size of the issues and because opportunities for moral action and building of moral character need further development, both in the veterinary program and the organizational culture.

A limitation of this study was that under 50% of each of the three cohorts participated and respondents were from only one university. It is possible that students who attended the teaching sessions were more interested in ethics issues or were more committed to their learning. Students absent from the teaching session were encouraged to complete the questionnaire online; however, none did. Further research involving whole cohorts and in other universities would be helpful. Nevertheless, this study suggests that among veterinary students, there is substantial moral sensitivity and motivation but minimal action to address animal ethics issues. By nurturing these three components of moral behavior, along with moral judgment, in veterinary programs, veterinarians should be more fulfilled and less stressed, and the veterinary profession should be more able to play a significant role in addressing community concerns regarding animal ethics issues.

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### NOTES

- a *Animal ethics* is defined here as "how humans should behave toward animals."
- b Blackboard Learn. Version 9.1. Washington, DC: Blackboard Inc.
- c Minitab Statistical Software. Version 16. State College, PA: Minitab Inc.

### REFERENCES

- 1 Rollin BE. An introduction to veterinary medical ethics. 2nd ed. Ames, IA: Blackwell Publishing; 2006. p. 27.
- 2 Morton DB. A commentary on the animal welfare symposium, with possible actions. *J Vet Med Educ*. 2010;37(1):107-13. <http://dx.doi.org/10.3138/jvme.37.1.107>. Medline:20378888
- 3 Raines ML. Ethical decision making in nurses. *JONA's Health Law Ethics Reg*. 2000;2(1):29-41.
- 4 Batchelor CE, McKeegan DE. Survey of the frequency and perceived stressfulness of ethical dilemmas encountered in UK veterinary practice. *Vet Rec*. 2012;170(1):19-22. <http://dx.doi.org/10.1136/vr.100262>. Medline:22084032
- 5 Magalhães-Sant'Ana M, Olsson IAS, Sandoe P, et al. How ethics is taught by European veterinary faculties: a review of published literature and web resources. In: Romeo-Casabona CM, San-Epifanio LE, Emaldi-Cirion A, editors. *Global food security: ethical and legal challenges*. Wageningen, Netherlands: Wageningen Academic Publishers; 2010. p. 441-6.
- 6 Magalhães-Sant'Ana M, Baptista C, Olsson I, et al. Teaching animal ethics to veterinary students in Europe: examining aims and methods. In: Millar K, West PH, Nerlich B, editors. *Ethical futures: bioscience and food horizons*. Wageningen, Netherlands: Wageningen Academic Publishers; 2009. p. 197-202.
- 7 Rest J. Background: theory and research. In: Rest J, Narvaez D, editors. *Moral development in the professions: psychology and applied ethics*. Hillsdale, NJ: Lawrence Earlbaum Associates; 1994. p. 1-26.
- 8 Thoma S. Moral judgements and moral action. In: Rest J, Narvaez D, editors. *Moral development in the professions: psychology and applied ethics*. Hillsdale, NJ: Lawrence Earlbaum Associates; 1994. p. 199-211.
- 9 Bredemeier B, Shields D. Applied ethics and moral reasoning in sport. In: Rest J, Narvaez D, editors. *Moral development in the professions: psychology and applied ethics*. Hillsdale, NJ: Lawrence Earlbaum Associates; 1994. p. 173-87.
- 10 Bebeau MJ. The defining issues test and the four component model: contributions to professional education. *J Moral Educ*. 2002;31(3):271-95. <http://dx.doi.org/10.1080/0305724022000008115>. Medline:15027443
- 11 Paul ES, Podberscek AL. Veterinary education and students' attitudes towards animal welfare. *Vet Rec*. 2000;146(10):269-72. <http://dx.doi.org/10.1136/vr.146.10.269>. Medline:10749039
- 12 Serpell JA. Factors influencing veterinary students career choices and attitudes to animals. *J Vet Med Educ*. 2005;32(4):491-6. Medline:16421833

- 13 Hazel SJ, Signal TD, Taylor N. Can teaching veterinary and animal-science students about animal welfare affect their attitude toward animals and human-related empathy? *J Vet Med Educ*. 2011;38(1):74–83. <http://dx.doi.org/10.3138/jvme.38.1.74>. Medline:21805938
- 14 Izmirli S, Phillips CJC. The attitudes of Australian and Turkish students of veterinary medicine towards animals and their careers. *Soc Anim*. 2014. In press.
- 15 Heath TJ, Lynch-Blosse M, Lanyon A. A longitudinal study of veterinary students and recent graduates: 1. Backgrounds, plans and subsequent employment. *Aust Vet J*. 1996;74(4):291–6. <http://dx.doi.org/10.1111/j.1751-0813.1996.tb13778.x>. Medline:8937670
- 16 Verrinder JM, Phillips CJC. Development of a moral judgment measure for veterinary education. *J Vet Med Educ*. 2014;41(3):258–64.
- 17 Rest J, Narvaez D, Bebeau M, et al. Postconventional moral thinking: a Neo-Kohlbergian approach. Mahwah, NJ: Lawrence Erlbaum Associates; 1999.
- 18 Bebeau MJ. Influencing the moral dimensions of dental practice. In: Rest J, Narvaez D, editors. *Moral development in the professions: psychology and applied ethics*. Hillsdale, NJ: Lawrence Erlbaum Associates; 1994. p. 121–46.
- 19 Brabeck MM, Rogers LA, Sirin S, et al. Increasing ethical sensitivity to racial and gender intolerance in schools: development of the Racial Ethical Sensitivity Test. *Ethics Behav*. 2000;10(2):119–37. [http://dx.doi.org/10.1207/S15327019EB1002\\_02](http://dx.doi.org/10.1207/S15327019EB1002_02).
- 20 Sadler TD. Moral sensitivity and its contribution to the resolution of socio-scientific issues. *J Moral Educ*. 2004;33(3):339–58. <http://dx.doi.org/10.1080/0305724042000733091>. Medline:16317839
- 21 Butterfield KD, Trevin LK, Weaver GR. Moral awareness in business organizations: influences of issue-related and social context factors. *Hum Relat*. 2000;53(7):981–1018. <http://dx.doi.org/10.1177/0018726700537004>.
- 22 Hills A. Empathy and belief in the mental experience of animals. *Anthrozoos*. 1995;8(3):132–42. <http://dx.doi.org/10.2752/089279395787156347>.
- 23 Opatow S. Animals and the scope of justice. *J Soc Issues*. 1993;49(1):71–85. <http://dx.doi.org/10.1111/j.1540-4560.1993.tb00909.x>.
- 24 Preston N. *Understanding ethics*. 2nd ed. Sydney: The Federation Press; 2001. p. 14–5.
- 25 Levine ED, Mills DS, Houpt KA. Attitudes of veterinary students at one US college toward factors relating to farm animal welfare. *J Vet Med Educ*. 2005;32(4):481–90. Medline:16421832
- 26 Maeda Y, Thoma SJ, Bebeau MJ. Understanding the relationship between moral judgment development and individual characteristics: the role of educational contexts. *J Educ Psychol*. 2009;101(1):233–47. <http://dx.doi.org/10.1037/a0013381>.
- 27 King PM, Mayhew MJ. Moral judgement development in higher education: insights from the Defining Issues Test. *J Moral Educ*. 2002;31(3):247–70. <http://dx.doi.org/10.1080/0305724022000008106>.
- 28 Betan EJ, Stanton AL. Fostering ethical willingness: integrating emotional and contextual awareness with rational analysis. *Prof Psychol Res Pr*. 1999;30(3):295–301. <http://dx.doi.org/10.1037/0735-7028.30.3.295>. Medline:14626282
- 29 Ajzen I. *Attitudes, personality and behaviour*. Maidenhead, UK: Open University Press; 2007.
- 30 McNeel S. College teaching and student moral development. In: Rest J, Narvaez D, editors. *Moral development in the professions: psychology and applied ethics*. Hillsdale, NJ: Lawrence Erlbaum Associates; 1994. p. 27–50.

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