**CHAPTER 3 – MATERIALS AND METHODS**

This section is divided into the following five subsections: Design, Participants, Instruments of Evaluation, Procedure, and Statistical analysis. The methods described are relevant for both the longitudinal and cross-sectional studies.

**Design**

In order to best evaluate the development of the attitudes of Israeli veterinary students toward the welfare of agricultural animals over the course of their training years, as well as the development of their psychological well-being, a quantitative longitudinal study was selected, as well as a cross-sectional study.

Generally, it takes four years to graduate with a degree in veterinary medicine, during which time the students learn in the same class groups. It is uncommon for a veterinary student to graduate alongside peers from a different class. This structured process of progression in the school allowed us to conduct a longitudinal study, which would track the attitudes and psychological well-being of the same students over the full course of their studies. Consequently, the differences observed in the group will be less likely the result of a change or differences in culture across generations. In addition, this kind of study is flexible in both focus and scope of data collection.

The purpose of the cross-sectional study was to expand the scope of the research to the whole student population of the school (approximately 220 students) in the same academic year (2010/2011), at the beginning and at the end of the year. The data collected enabled comparisons of the students’ attitudes and well-being across the years, which may further validate the results from the longitudinal study.

**Participants**

The participants in this study were Israeli veterinary students enrolled in The Koret School of Veterinary Medicine of the Hebrew University of Jerusalem (the only school of veterinary medicine in Israel). Israeli veterinary students are a relatively homogenous group, as over 96% of them are Jewish and Israeli.

*The study population*

During the 2010–2011 academic year, the average class size was ~55 students. The study aimed to include all students (n ≈ 220) enrolled in veterinary training in that specific academic year. The same survey (with minor adjustments according to the year of study) was distributed over the following four time points:

**Time of measurement (time point) 1**: First year, October–November 2010, three weeks into the first semester.

**Time of measurement (time point) 2**: First year, June 2011, at the end of the second semester.

**Time of measurement (time point) 3**: Second year, June 2012, at the end of the second semester.

**Time of measurement (time point) 4**: Fourth year, May–June 2014, toward the end of the second semester.

A total of 422 surveys were collected at all four time points.   
The mean age of the students at the beginning of their training (baseline) was 29.64 years (SD = 3.14 years). **Table 1** presents the response rate for each time of measurement within each year of study.

**Table 1. Response rates (the ratio between number of valid responses and number of missing responses) across times of measurement and years of study**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year of study | Response rate:  Time 1 | Response rate:  Time 2 | Response rate:  Time 3 | Response rate:  Time 4 |
| A | 44/60 (73%) | 40/60 (67%) | 45/60 (75%) | 30/60 (50%) |
| B | 49/55 (89%) | 30/55 (55%) | 46/55 (84%) | 0/55 (0%) |
| C | 42/47 (89%) | 35/47 (74%) | 0/47 (0%) | 0/47 (0%) |
| D | 37/44 (84%) | 24/44 (55%) | 0/44 (0%) | 0/44 (0%) |

**Table 2** presents the demographic and background characteristics of the study sample. Overall, no significant differences were found among the students in each year of their studies with the exception of age and preferred type of employment following graduation. Students’ age varied according to their level of progress in training (p < 0.001). A smaller percentage of students in Year A preferred to work with small animals after graduation, compared with their counterparts in Years B–C (p = 0.003).

**Table 2. Demographic characteristics of the research sample**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable** | **Year A** | **Year B** | **Year C** | **Year D** | **Statistical test** |
|  | *(n = 60)* | *(n = 55)* | *(n = 47)* | *(n = 44)* |  |
| Age at baseline | 28.7 (3.0) | 28.5 (2.4) | 29.9 (3.1) | 31.6 (3.1) | *F*(3, 173) = 10.4,  **p < 0.001** |
| Sex |  |  |  |  | χ2(3) = 4.1, p = 0.25 |
| Male | 15 (25%) | 10 (18%) | 16 (34%) | 15 (34%) |  |
| Female | 29 (48%) | 39 (71%) | 25 (53%) | 29 (66%) |  |
| Missing | 16 (27%) | 6 (11%) | 6 (13%) | 0 (0%) |  |
| Religiosity at baseline |  |  |  |  | Fisher’s exact = 7.9,  p = 0.51 |
| Atheist | 7 (12%) | 12 (22%) | 7 (15%) | 5 (11%) |  |
| Secular | 31 (52%) | 29 (53%) | 32 (68%) | 26 (59%) |  |
| Religious | 4 (7%) | 6 (11%) | 1 (2%) | 4 (9%) |  |
| Orthodox | 1 (2%) | 1 (2%) | 0 (0%) | 2 (5%) |  |
| Missing | 17 (28%) | 7 (13%) | 7 (15%) | 7 (16%) |  |
| Residence at childhood |  |  |  |  | χ2(3) = 4.1, p = 0.26 |
| City | 26 (43%) | 38 (69%) | 28 (60%) | 24 (55%) |  |
| Other | 17 (28%) | 10 (18%) | 13 (28%) | 13 (30%) |  |
| Missing | 17 (28%) | 7 (13%) | 6 (13%) | 7 (16%) |  |
| Political views at baseline |  |  |  |  | χ2(9) = 6.4, p = 0.70 |
| Left wing | 17 (28%) | 19 (35%) | 17 (36%) | 18 (41%) |  |
| Center | 11 (18%) | 11 (20%) | 6 (13%) | 5 (11%) |  |
| Right wing | 11 (18%) | 10 (18%) | 9 (19%) | 10 (23%) |  |
| Not sure | 4 (7%) | 9 (16%) | 8 (17%) | 3 (7%) |  |
| Missing | 17 (28%) | 6 (11%) | 7 (15%) | 8 (18%) |  |
| Preferred type of employment after graduation |  |  |  |  |  |
| Small animals | 24 (40%) | 37 (67%) | 35 (75%) | 32 (73%) | χ2(3) = 13.7,  **p = 0.003** |
| Farm animals | 14 (23%) | 9, (16%) | 8, (17%) | 7, (16%) | χ2(3) = 3.3, p = 0.36 |
| Equine | 10 (17%) | 5 (9%) | 5 (11%) | 3 (7%) | Fisher exact = 4.2,  p = 0.25 |
| Mixed practice | 10 (17%) | 10 (18%) | 7 (15%) | 10 (23%) | χ2(3) = 1.3, p = 0.72 |
| Exotic animals | 10 (17%) | 10 (18%) | 5 (11%) | 5 (11%) | χ2(3) = 2.4, p = 0.50 |
| Other | 3 (5%) | 3 (6%) | 4 (9%) | 2 (5%) | Fisher’s exact = 0.8,  p = 0.90 |
| Influences on personal and professional values |  |  |  |  |  |
| Parents | 23 (38%) | 32 (58%) | 23 (49%) | 20 (46%) | χ2(3) = 2.0, p = 0.58 |
| Other family members | 11 (19%) | 15 (27%) | 13 (28%) | 7 (16%) | χ2(3) = 2.0, p = 0.58 |
| Practicing veterinarians | 14 (23%) | 21 (28%) | 10 (21%) | 15 (34%) | χ2(3) = 4.3, p = 0.23 |
| Peers | 3 (5%) | 5 (9%) | 4 (9%) | 5 (11%) | Fisher’s exact = 1.1,  p = 0.82 |
| Religion | 1 (2%) | 0 (0%) | 0 (0%) | 2 (5%) | Fisher’s exact = 3.5,  p = 0.13 |
| Interaction/ experience with animals | 38 (63%) | 40 (73%) | 32 (68%) | 33 (75%) | χ2(3) = 2.8, p = 0.42 |
| Educational institutions | 2 (3%) | 6 (11%) | 6 (13%) | 4 (9%) | Fisher’s exact = 2.7,  p = 0.45 |
| Other experiences | 12 (20%) | 11 (20%) | 12 (26%) | 8 (18%) | χ2(3) = 0.8, p = 0.85 |
| Diet |  |  |  |  | Fisher’s exact = 3.7,  p = 0.96 |
| Omnivore | 34 (57%) | 37 (67%) | 27 (58%) | 27 (61%) |  |
| Vegetarian | 7 (12%) | 8 (15%) | 11 (23%) | 8 (18%) |  |
| Vegan | 1 (2%) | 1 (2%) | 1 (2%) | 1 (2%) |  |
| Other | 2 (3%) | 3 (6%) | 3 (6%) | 1 (2%) |  |
| Missing | 16 (27%) | 6 (11%) | 5 (11%) | 7 (16%) |  |
| Reasons for choosing a veterinary career |  |  |  |  | Fisher’s exact = 14.0,  p = 0.21 |
| Financial incentives | 1 (2%) | 0 (0%) | 0 (0%) | 0 (0%) |  |
| A commitment to animals | 32 (53%) | 28 (51%) | 28 (60%) | 9 (21%) |  |
| Opportunity to practice medicine but not on people | 3 (5%) | 13 (24%) | 10 (22%) | 2 (5%) |  |
| Science or Research | 1 (2%) | 1 (2%) | 2 (4%) | 0 (0%) |  |
| Other | 2 (3%) | 6 (11%) | 0 (0%) | 0 (0%) |  |
| Missing | 21 (35%) | 7 (13%) | 7 (15%) | 33 (75%) |  |
| Empathy toward animals at baseline[[1]](#footnote-1) | 156 (16.9) | 158 (17.0) | 156 (24.6) | 159 (16.4) | *F* (3, 161) = 0.18,  p = 0.91 |

Values are expressed as counts and percentages [n, (%)] or means and standard deviations M (SD)

**Instruments of evaluation**

*The study survey*

Each of the instruments evaluated for this study was considered on the basis of the following criteria: 1) the instrument had already been used in previous research, preferably within the field of veterinary medicine; 2) had acceptable reliability and validity; 3) was brief, with as few items as possible; and 4) could be used without copyright conflict.

The survey was designed to collect background and demographic data of the study population, together with data probing different domains that concern veterinary students, including empathy for animals; knowledge and attitudes toward the welfare of agricultural animals; the psychological well-being of students; and ethical dilemmas that the students have encountered during their studies. Therefore, the survey included several parts evaluating the following domains:

*I. Demographic and background characteristics*

This part of the survey comprised 21 demographic questions, some of which were asked only during the first semester of the first year, and thus, constituting the baseline information for the study. Other demographic questions were asked repeatedly at all four time points to follow potential changes in responses over time. The questions chosen aimed to address any possible and relevant correlations between demographic background and attitudes toward animals already reported in the literature regarding the human-animal relationship (Serpell, 2005).

Questions requested the following information: the last five digits of the student’s identification number for future tracking; year of birth; gender; current year in training; prior education attained; relationship status; residence during childhood (rural vs. non-rural background); level of religiosity; political ideology; pet ownership during childhood and while a veterinary student; species of pets owned during childhood and during the study; subjective importance of pet ownership during childhood; reasons for choosing a veterinary career; influences on the decision to pursue a veterinary career; future animal practice plans (e.g., small animals or farm animals); current diet; and self-assessed level of empathy toward people and animals. This part also included questions tapping into a variety of ethical dilemmas that veterinary students may encounter during their studies. (**See full details in Appendix A, pp.** ).

*II. Empathy for animals*

The Animal Empathy Scale (Paul, 2000) was used in the pioneering study of Paul and Podberscek (2000), measuring veterinary students’ attitudes toward farm animal welfare in the UK. This 28-item scale was developed by Paul (2000) after Mehrabian and Epstein’s (1972) ‘survey measure of emotional empathy’ and was used in the current study to assess Israeli veterinary students’ empathy for animals.

The scale consists of 28 statements expressing empathetic sentiments toward animals in varying degrees. The students were required to respond to each statement in terms of a seven-point Likert-type scale, ranging from “Agree very strongly” (maximum 7) to “Disagree very strongly” (minimum 1). The total Animal Empathy Scale score was calculated as the sum of the 28 responses, with a higher score indicating enhanced empathy. (**See full details in Appendix A, p.** ).

*III. Knowledge and attitudes regarding the welfare of agricultural animals*

This part consisted, with permission from the authors, of parts from relevant surveys developed by Heleski et al. (2004) and Paul and Podberscek (2000). These surveys were designed to evaluate attitudes, including those of veterinary students, toward the welfare of agricultural animals. The total number of questions in this part was 47, distributed as follows (**See full details in Appendix A, p.** ):

1. Six questions pertained to whether respondents felt the predominant methods currently used to produce animal products, provide an appropriate level of animal welfare in the beef, dairy, layer chicken, meat bird, sheep, and swine industries.
2. Seven questions pertained to various aspects of the Five Freedoms (Heleski, 2004).
3. Four questions were related to specific beliefs with regards to agricultural animals (e.g., “agricultural animals have individual temperaments”) (Heleski, 2004).
4. Thirteen questions asked respondents to indicate their level of agreement/disagreement with various husbandry practices (e.g., levels of lameness in dairy cattle) that were cited as concerns in a previous survey of American animal science students (Heleski et al., 2004).
5. One question asked respondents to categorize themselves in terms of their attitude toward animal use and care on a seven-point scale. The first statement represented a strong animal rights position (“I take a strong animal rights position; i.e., I believe a human, a dog, and a rat all have comparable rights and each individual’s desires should be respected equally”); the fourth statement represented a midpoint position (“I believe in using animals for the greater human good - could be with regards to food production, providing work, recreational purposes, etc. - but we have an obligation to provide for the majority of their physiological and behavioral needs”; the seventh statement represented a strong anthropocentric position (“I am not at all concerned about animal welfare issues; animals were put on this earth for us to use in whatever possible way they can benefit us the most and in the least expensive way possible.”) (Heleski and Zanella, 2004).
6. Eight questions were modified from a survey conducted by Paul and Podberscek (2000), that were also used in the survey of Heleski and Zanella (2004), regarding attitudes of veterinary students toward farm animal welfare. The questions related to how different animal species potentially feel the sensation of pain, e.g.: “Do you think most pigs can feel the sensation of pain?” Responses included: “yes, in a way very similar to people;” “yes, though not as intensely as people;” “they respond to pain but only in an instinctive-avoidance manner;” and “no, not at all.” The animal species categories were (in the following order): mice/rats, cattle, pigs, sheep, chickens/turkeys, cats, dogs, and monkeys. These animal species were included in the survey for two reasons: 1. for comparison with the results of previous surveys; and 2. in an attempt to create a hierarchy of different species perceiving sensations of pain and boredom. Thus, species were added that were not included in the original surveys conducted by Paul and Podberscek (2000) and Heleski and Zanella (2004), and the following categories were created: 1. small animals (rodents); 2. agricultural animals (cattle, sheep, and pigs); 3. chickens and turkeys (birds); 4. pets (cats and dogs); 5. monkeys.
7. Eight questions were related to how different animals potentially experience or do not experience boredom (Paul and Podberscek, 1995). Responses consisted of: “yes, in a way very similar to people;” “yes, though not as intensely as people;” “to some degree;” and “no, not at all.” The animal species categories were similar to those used in the questions related to the perceived sensation of pain.

Overall, most questions in this part could have been answered with a typical Likert-style scale: “Strongly agree,” “Agree,” “Neutral/unsure,” “Disagree,” and “Strongly disagree” (Mueller, 1986). In order to ensure a sufficient number of responses, “Strongly agree” and “Agree” responses were combined into one response category, and so were “Strongly disagree” and “Disagree.” In addition, for the questions related to various husbandry practices, we allowed the option of “not familiar enough” with the species or practice, instead of “Neutral/unsure.”

Some of the questions described above served to create the Total Attitude Scale (TAS),which was developed and used by Heleski and Zanella (2004). Originally, the TAS was used to measure general concern for the welfare of agricultural animals among different target audiences, and it is calculated as the sum of its items’ scores. For our research purposes, we utilized the following questions, adopted from the original TAS, with few modifications, as briefly follows (See Appendix B for details):

1. Six questions related to production methods.
2. Two questions related to the Five Freedoms: 1. “Agricultural animals should have freedom to express a majority of their normal behavioral repertoire;” and 2. “Agricultural animals are entitled to a quick and humane death at the end of their lives.”
3. Four questions related to beliefs about the welfare of agricultural animals: 1. “If animals are producing (i.e., gaining weight and producing eggs, etc.), that means they have good welfare;” 2. “Agricultural animals have individual temperaments;” 3. “Agricultural animals can experience a sensation akin to boredom;” 4. “It is important to meet the majority of behavioral needs possessed by agricultural animals (behavioral needs are here defined as behaviors in which animals are highly motivated to be engaged.)’.
4. Thirteen questions related to participants’ level of agreement/disagreement with various husbandry practices.

The questions that were omitted from our version of the TAS score calculation, and which appeared in the original scale included: 1. questions related to behavioral intentions regarding the consumption of animal products (e.g., “As a consumer, I would be willing to pay slightly more for products coming from facilities that are enhancing welfare beyond current industry-common levels”), because they were irrelevant to the research goals; and 2. questions related to the Five Freedoms, because of a ceiling effect that occurred in the analysis of these statements (meaning that almost all students scored a maximum on the observed variables). This made discrimination among subjects at the top end of the scale impossible.

In the current study, Cronbach’s α reliability coefficient of the TAS for all time points across all veterinary school years of study (A–D) was greater than 0.80, indicating a good level of reliability (See additional details in Table XX).

*IV: Stress and well-being among veterinary students*

In order to measure these constructs, we applied the following existing, proven instruments, that have already been used in previous studies on veterinary students (Nelsen, 2006; Paul and Podberscek, 2000) (**See full details in Appendix D**):

Veterinary Studies-Related Stress (VSRS) scale

This instrument, originally developed by Paul and Podberscek (2000), included nine questions concerning veterinary related stress. The students were asked to indicate how stressful they perceived the list of stressors to be, on a five-point Likert-type scale, ranging from “not stressful” (1) to “extremely stressful” (5).

Cronbach’s α reliability coefficient of the VSRS scale among all time points across all veterinary school years of study (A–D) was greater than 0.70, indicating a satisfactory level of reliability, with the exception of three time points, where it ranged from 0.50 to 0.60. Individual scores on the VSRS can range from 9 to 45, with higher scores indicating greater stress.

Perceived Stress Scale (PSS)

This instrument, developed by Cohen et al. (1983), asked the participants to respond to statements regarding their feelings and thoughts over the last month. The authors specify that “PSS items are designed to tap the degree to which respondents found their lives unpredictable, uncontrollable, and overloading” (Cohen et al., 1983, p. 387).

The original PSS comprised 14 five-point Likert-type scaled items. However, Cohen and Williamson (1988) recommended the use of a slightly shorter version (PSS10). The PSS has been used extensively in eight studies between 1986 and 1991 (Hewitt, et al., 1992), and is considered to be reasonably valid and reliable. The scale has a coefficient α reliability ranging between 0.75 (Cohen and Williamson, 1988) and 0.88 (Mimura and Griffiths, 2004), and a test-retest correlation ranging between 0.55 and 0.85 (Cohen et al., 1983). Cohen et al. (1995) deemed the test to be appropriate for all age groups.

In the current study, Cronbach’s α reliability coefficient of the PSS among all time points across all veterinary school years of study (A–D) was greater than 0.80, indicating of a good level of reliability, with the exception of two time points, in which it ranged from 0.38 to 0.69. Individual scores on the PSS-10 can range from 0 to 40, with higher scores indicating higher levels of perceived stress.

Satisfaction with Life Scale (SWLS)

This instrument, developed by Diener et al. 1985, comprised five statements to which respondents ranked their level of agreement on a seven-point Likert-type scale. It assesses an individual’s global judgment of life satisfaction in a reliable manner and is a cognitive, rather than an affective, assessment (Pavot and Diener, 1993). An initial study conducted by the scale developers revealed a two-month test-retest correlation coefficient of 0.82, and an internal coefficient α of 0.87. A later study by Pavot et al. (1991) further supported the reliability and validity of the SWLS, exhibiting high correlations (0.81, and up to 0.75, respectively) with the Life Satisfaction Index-A (LSI-A; Neugarten et al., 1961). In a 1993 review article, Pavot and Diener (1993) provided extensive normative data for the SWLS, listing all the studies in which the SWLS had been utilized (25). Another article reported internal consistency coefficients ranging between 0.79 and 0.89 )Nelsen, 2006(.

In the current study, Cronbach’s α reliability coefficient of the SWLS among all time points across all veterinary school years of study (A–D) was greater than 0.80, indicating a good level of reliability. Individual scores on the SWLS can range from 5 to 35, with higher scores indicating higher satisfaction with life.

Rosenberg Self-Esteem Survey (RSE)

This instrument, developed by Rosenberg in 1965, was selected for the current study because it had been used previously in a large study of veterinary students (Cron et al., 1999), and its well-established reliability (Cronbach’s α ranging between 0.77 and 0.88, and test-retest correlations typically in the range of 0.82 to 0.88) (Blascovich and Tomaka, 1993; Rosenberg, 1986). In the current study, the Cronbach’s α reliability coefficient of the RSE among all time points, across all veterinary school years of study (A–D), was greater than 0.80, indicating of a good level of reliability, with the exception of two time points for which it was 0.64. The scale ranges from 0 to 30, with 30 indicating the highest score possible. Table 3 presents the time points for which the instruments mentioned above were administered during the veterinary school years of study (A–D).

**Table 3. Tracking of instruments used in the current study**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Scale/Data/Instrument** | **Time of measurement** | **Year A** | **Year B** | **Year C** | **Year D** |
| Demographic | Baseline | √ | √ | √ | √ |
|  | Second semester | √\* | √\* | √\* | √\* |
|  | Second year | √\* | √\* | √\* | x |
|  | Fourth year | √\* | x | x | x |
| Ethical dilemmas | Baseline | x | x | x | x |
|  | Second semester | x | x | x | √ |
|  | Second year | x | x | x | x |
|  | Fourth year | √ | x | x | x |
| Empathy for animals | Baseline | √ | √ | √ | √ |
|  | Second semester | x | x | x | x |
|  | Second year | x | x | x | x |
|  | Fourth year | x | x | x | x |
| Knowledge and attitudes toward animal welfare scales | Baseline | √ | √ | √ | √ |
|  | Second semester | √ | √ | √ | √ |
|  | Second year | √ | √ | x | x |
|  | Fourth year | √ | x | x | x |
| Total Attitude Scale (TAS) | Baseline | √ | √ | √ | √ |
|  | Second semester | √ | √ | √ | √ |
|  | Second year | √ | √ | x | x |
|  | Fourth year | √ | x | x | x |
| Veterinary Studies Related Stress (VSRS) scale | Baseline | √ | √ | √ | √ |
|  | Second semester | √ | √ | √ | √ |
|  | Second year | √ | √ | x | x |
|  | Fourth year | √ | x | x | x |
| Perceived Stress Scale (PSS) | Baseline | √ | √ | √ | √ |
|  | Second semester | √ | √ | √ | √ |
|  | Second year | √ | √ | x | x |
|  | Fourth year | √ | x | x | x |
| Satisfaction with Life Scale (SWLS) | Baseline | √ | √ | √ | √ |
|  | Second semester | √ | √ | √ | √ |
|  | Second year | √ | √ | x | x |
|  | Fourth year | √ | x | x | x |
| Rosenberg Self-Esteem Survey (RSE) | Baseline | √ | √ | √ | √ |
|  | Second semester | √ | √ | √ | √ |
|  | Second year | √ | √ | x | x |
|  | Fourth year | √ | x | x | x |

\* Short version of the demographic survey.

**Procedure**

The methods of data collection were almost similar in both the cross-sectional and longitudinal studies. In both cases, the researcher contacted the veterinary students’ class representatives (each year has one representative for the class) and consulted with them regarding the lectures with the highest numbers of students attending. Based on this information, the researcher contacted the instructor of the class by email, with a request for permission to distribute the surveys during the class. On the chosen date, the researcher went to each classroom, gave a brief description of the survey, emphasized that completion of the survey was voluntary and optional, and explained that the answers would be handled in a confidential manner.

Surveys were collected from students as they exited the classroom. Participants were made aware that their participation in this research could be beneficial to future veterinary students. Participants were reminded of the benefits of participating in the scientific process by completing the survey completely and thoroughly. Participants were also made aware that there would be no negative ramifications for anyone who chose to not participate, or who chose to withdraw during the survey process. The average time for completion was 15 minutes. The students received a little thank you reward upon completion of the survey at the second, third, and fourth time points. The rewards varied over the years of research, and included a book, a flash drive device in the second year, or a payment of 25 NIS (approximately $7).

An informed consent form describing the purpose of the voluntary and confidential research, as well as the names and contact information of the researchers, was attached to the front of each survey. The survey was approved by the Committee for Research Involving Human Subjects of the Koret School of Veterinary Medicine, The Hebrew University.

Web-based survey

The fourth year of veterinary medicine training in Israel is a clinical year, which is taught at the Hebrew University veterinary hospital, located in the Ministry of Agriculture and Rural Development campus area, in the city of Rishon LeZion. Unlike the preclinical years, during which students learn mainly in university classrooms, the clinical year involves clinical rotations in the hospitals’ units (e.g., intensive care unit, equine unit, etc.). Thus, it is difficult to assemble them all in one room and have them complete a 15-minute survey. Following the advice of the head of the veterinary school, a web-based version of the survey was created, in order to target clinical year students.

The students of the fourth year (both in the 2011 cross-sectional study, and in 2014, the fourth time point of the longitudinal study) were asked to complete an online version of the survey. In order to maintain their anonymity and privacy, the students received a forwarded email from the veterinary school students’ coordinator, which contained an embedded link to the survey website in Hebrew. After the data was downloaded, checks were run to eliminate or correct any problems.

**Statistical analysis**

Descriptive statistics were analyzed using frequencies and percentages for categorical and ordinal data, and means and standard deviations for continuous measures. Associations between categorical variables of interest were analyzed using Pearson’s chi-squared test or Fisher’s exact test, as appropriate. Associations between ordinal variables of interest were analyzed using the Mann–Whitney test. Longitudinal analyses between continuous variables of interest, times of measurement, year of study, and relevant covariates were conducted using a mixed linear model for repeated measures. All analyses were performed using the SPSS 21 software, a p-value ≤ 0.05 was considered statistically significant.

APPENDIX A

Attitude Survey for Veterinary Students

Dear student,

You are being asked to complete a surveyabout veterinary students’ demographic background, attitudes toward the welfare of agricultural animals, and psychological well-being across their studies in veterinary school.

This is the first research study of its kind to be focused on Israeli veterinary students, and your answers are extremely important to help us better understand this topic. However, your participation in this survey is completely voluntary, and you can withdraw at any time.

The survey consists of four parts. The first two parts are related to your knowledge and attitudes toward the welfare of agricultural animals; the third part is related to your psychological well-being; and the fourth part is related to your background.

There are no correct answers to the questions. Your answers will be treated with complete confidentiality and your privacy will be protected to the maximum extent. You are requested to complete the last five digits of your ID number only for correlating your answers across different times of measurement, throughout the duration of your studies.

We estimate this survey will take 15 to 20 minutes to complete. Please bear in mind that you have the option to omit certain questions and can discontinue participation at any time.

If you have any questions regarding this research study, you can contact me at tamar.meri@mail.huji.ac.il or 054-6440441. This is also the means to contact my instructors, Dr. Otniel Dror, the Medical Faculty of The Hebrew University of Jerusalem, and Prof. Ruth Landau, The School of Social Work of The Hebrew University of Jerusalem.

**Thank you for your cooperation!**

Part 1: Feelings about animals

Below is a list of statements that different people have made about the way they feel about animals, representing a range of different views. Please indicate how strongly you agree or disagree with the following statements, by drawing a circle around the appropriate number on the scale.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Agree very strongly |  |  | Neutral or unsure |  |  | Disagree very strongly |
| 7 | 6 | 5 | 4 | 3 | 2 | 1 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | So long as they’re warm and well fed, I don’t think zoo animals mind being kept in cages | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | Often cats will meow and pester for food even when they are not really hungry | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3 | It upsets me to see animals being chased and killed by lions in wildlife programs on TV | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4 | The thought of calves being rearedin veal crates really makes me feel sad | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5 | Sad films about animals often leave me with a lump in my throat | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6 | Animals deserve to be told off when they’re not behaving properly | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7 | People are too concerned about the suffering of laboratory rats and mice | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | People who cuddle and kiss their pets in public annoy me | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | A friendly purring cat almost always cheers me up | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10 | It upsets me when I see helpless old animals | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11 | Dogs sometimes whine and whimper for no real reason | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12 | It makes me angry to think of the things that are done to laboratory animals | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13 | I get very angry when I see animals being ill treated | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14 | It is silly to become too attached to one’s pets | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15 | Pets have a great influence on my moods | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16 | Sometimes I am amazed how upset people get when an old pet dies | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17 | It is silly to worry about how farm animals feel | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18 | Seeing animals in pain upsets me | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19 | People often make too much of the feelings and sensitivities of animals | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20 | I find it irritating when dogs tryto greet me by jumping up and licking me | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21 | I would always try to help, if I see a dog or puppy that seemed to be lost | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22 | I hate to see birds in cages where there is no room for them to fly about | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23 | It upsets me to see farm animals in lorries going to slaughter | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24 | I enjoy feeding scraps of food to the birds | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25 | It makes me sad to see an animal on its own in a cage | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26 | I get annoyed by dogs that howl and bark when they are left alone | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 27 | I hate seeing pictures of animals used in scientific experiments | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 28 | Many people are over-affectionate toward their pets | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Part 2: Knowledge and attitudes toward the welfare of animals and their subjective experience

For questions **1–3**, please use the following choices:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Strongly disagree | Disagree | Neutral or unsure | Agree | Strongly agree |
| 1 | 2 | 3 | 4 | 5 |

1. The predominant methods that are currently used to produce animal products provide an appropriate level of animal welfare in the:

[ ] Beef cattle industry   
[ ] Dairy cattle industry  
[ ] Layer chicken industry   
[ ] Meat bird industry  
[ ] Sheep industry   
[ ] Swine industry

1. This next question relates to some of your values regarding various aspects of animal welfare. Please mark your agreement with every statement:

[ ] Agricultural animals should have freedom from hunger most of the time.  
[ ] Agricultural animals should have freedom from thirst most of the time.  
[ ] Agricultural animals should have freedom from unnecessary pain and/or   
 discomfort.  
[ ] Agricultural animals should have freedom from injury and disease (or prompt   
 treatment should they arise).  
[ ] Agricultural animals should have freedom to express a majority of their normal   
 behavioral repertoire.  
[ ] Agricultural animals should have freedom from unnecessary fear and/or distress.  
[ ] Agricultural animals are entitled to a quick and humane death at the end of their   
 lives.

1. This next question relates to some of your beliefs regarding various aspects of animal welfare. Please mark your agreement with every statement:

[ ] If animals are producing (i.e., gaining weight, producing eggs, etc.), that means   
 they have good welfare.  
[ ] Agricultural animals have individual temperaments.  
[ ] Agricultural animals can experience something akin to boredom.  
[ ] It is important to meet the majority of the behavioral needs of agricultural   
 animals (behavioral needs are defined here as those behaviors in which animals are highly motivated to be engaged).

1. An earlier survey of animal science students revealed several current animal production practices/outcomes that students felt were of concern. The following list represents some of the more frequently mentioned items. Please rate the following practices/outcomes using these choices:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Strongly disagree it is a concern | Disagree it is a concern | Not familiar enough with practice to form an opinion | Agree it is a concern | Strongly agree it is a concern |
| 1 | 2 | 3 | 4 | 5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | Branding of beef cattle | 1 | 2 | 3 | 4 | 5 |
| 2 | Dehorning without local anesthetic | 1 | 2 | 3 | 4 | 5 |
| 3 | Levels of lameness in dairy cattle | 1 | 2 | 3 | 4 | 5 |
| 4 | Tail docking in dairy cattle | 1 | 2 | 3 | 4 | 5 |
| 5 | Toe trimming in poultry | 1 | 2 | 3 | 4 | 5 |
| 6 | Beak trimming in poultry | 1 | 2 | 3 | 4 | 5 |
| 7 | Cage space for layers | 1 | 2 | 3 | 4 | 5 |
| 8 | Gestation crates for sows | 1 | 2 | 3 | 4 | 5 |
| 9 | Early weaning in pigs | 1 | 2 | 3 | 4 | 5 |
| 10 | Castration without anesthetic | 1 | 2 | 3 | 4 | 5 |
| 11 | Flooring effects on lameness in intensively farmed animals | 1 | 2 | 3 | 4 | 5 |
| 12 | Poor or indifferent stockmanship | 1 | 2 | 3 | 4 | 5 |
| 13 | Methods of transportation to slaughter | 1 | 2 | 3 | 4 | 5 |

1. Please mark next to one of the numbers on the scale below where you would categorize yourself in terms of your attitude toward animal use and care:

* 1 = I take a strong animal rights position, i.e., I believe a human, a dog, and a rat all have comparable rights and each individual’s desires should be   
   respected equally.
* 2 = Intermediate between A and D, but more nearly like A.
* 3 = Intermediate between A and D, but more nearly like D.
* 4 = I believe in using animals for the greater human good (could be with regards to   
   food production, providing work, recreational purposes, etc.), but we   
   have an obligation to provide for the majority of their physiological and   
   behavioral needs.
* 5 = Intermediate between D and G, but more nearly like D.
* 6 = Intermediate between D and G, but more nearly like G.
* 7 = I am not at all concerned about animal welfare issues; animals were put on   
   this earth for us to use in whatever possible way they can benefit us the most   
   and in the least expensive way possible.

1. The following questions (6–7) are modified from a survey conducted by Paul and Podberscek (2000). Please mark your responses according to the scale below:

|  |  |  |  |
| --- | --- | --- | --- |
| Yes, in a way very similar to people | Yes, though not as intensely as people | They respond to pain but only in an instinctive-avoidance manner | No, not at all |
| 1 | 2 | 3 | 4 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | Do you think most mice/rats can feel the sensation of pain? | 1 | 2 | 3 | 4 |
| 2 | Do you think most cattle can feel the sensation of pain? | 1 | 2 | 3 | 4 |
| 3 | Do you think most sheep can feel the sensation of pain? | 1 | 2 | 3 | 4 |
| 4 | Do you think most pigs can feel the sensation of pain? | 1 | 2 | 3 | 4 |
| 5 | Do you think most chickens/turkeys can feel the sensation of pain? | 1 | 2 | 3 | 4 |
| 6 | Do you think most cats can feel the sensation of pain? | 1 | 2 | 3 | 4 |
| 7 | Do you think most dogs can feel the sensation of pain? | 1 | 2 | 3 | 4 |
| 8 | Do you think most monkeys can feel the sensation of pain? | 1 | 2 | 3 | 4 |

1. For the following questions, please mark your responses according to the scale below:

|  |  |  |  |
| --- | --- | --- | --- |
| Yes, in a way very similar to people | Yes, though not as readily as people | To some degree | No, not at all |
| 1 | 2 | 3 | 4 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | Do you think most mice/rats can feel the sensation of boredom? | 1 | 2 | 3 | 4 |
| 2 | Do you think most cattle can feel the sensation of boredom? | 1 | 2 | 3 | 4 |
| 3 | Do you think most sheep can feel the sensation of boredom? | 1 | 2 | 3 | 4 |
| 4 | Do you think most pigs can feel the sensation of boredom? | 1 | 2 | 3 | 4 |
| 5 | Do you think most chickens/turkeys can feel the sensation of boredom? | 1 | 2 | 3 | 4 |
| 6 | Do you think most cats can feel the sensation of boredom? | 1 | 2 | 3 | 4 |
| 7 | Do you think most dogs can feel the sensation of boredom? | 1 | 2 | 3 | 4 |
| 8 | Do you think most monkeys can feel the sensation of boredom? | 1 | 2 | 3 | 4 |

Part 3: Psychological well-being

This part of the survey includes questions about stress factors during veterinary studies, and your current stress level, self-esteem, and life satisfaction.

1. *Veterinary Studies Related Stress* (VSRS; Paul and Podberscek, unpublished)

Being a student is often one of the more stressful times of a person’s life, especially for those undertaking courses such as veterinary education. Listed below are a number of ways in which veterinary students can feel stressed. Stressors are difficult or troubling experiences that take considerable effort to deal with. Please respond to each item by indicating how stressful (from not stressful to extremely stressful) you have perceived these experiences to be, following this scale:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Not stressful | Slightly stressful | Moderately stressful | Very stressful | Extremely stressful |
| 1 | 2 | 3 | 4 | 5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | Examinations | 1 | 2 | 3 | 4 | 5 |
| 2 | General workload | 1 | 2 | 3 | 4 | 5 |
| 3 | Dealing with the owners of patients | 1 | 2 | 3 | 4 | 5 |
| 4 | Dealing with teaching staff and other vets | 1 | 2 | 3 | 4 | 5 |
| 5 | Dealing with other students | 1 | 2 | 3 | 4 | 5 |
| 6 | Dealing with the death of patients | 1 | 2 | 3 | 4 | 5 |
| 7 | Moral concerns about the treatment of patients | 1 | 2 | 3 | 4 | 5 |
| 8 | Financial problems | 1 | 2 | 3 | 4 | 5 |
| 9 | Emotional problems with friends or family | 1 | 2 | 3 | 4 | 5 |

1. *Perceived Stress Scale* (PSS; Cohen et al., 1983)

The questions on this scale ask about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them, and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, do not try to count the number of times you felt a particular way, but rather indicate the choice that seems like a reasonable estimate. For each question, please select from the following choices:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Never | Almost never | Sometimes | Fairly often | Very often |
| 0 | 1 | 2 | 3 | 4 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | In the last month, how often have you been upset because of something that happened unexpectedly? | 0 | 1 | 2 | 3 | 4 |
| 2 | In the last month, how often have you felt that you were unable to control the important things in your life? | 0 | 1 | 2 | 3 | 4 |
| 3 | In the last month, how often have you felt nervous and “stressed?” | 0 | 1 | 2 | 3 | 4 |
| 4 | In the last month, how often have you dealt successfully with irritating life hassles? | 0 | 1 | 2 | 3 | 4 |
| 5 | In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life? | 0 | 1 | 2 | 3 | 4 |
| 6 | In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life? | 0 | 1 | 2 | 3 | 4 |
| 7 | In the last month, how often have you felt that things were going your way? | 0 | 1 | 2 | 3 | 4 |
| 8 | In the last month, how often have you found that you could not cope with all the things that you had to do? | 0 | 1 | 2 | 3 | 4 |
| 9 | In the last month, how often have you been able to control irritations in your life | 0 | 1 | 2 | 3 | 4 |
| 10 | In the last month, how often have you found that you could not cope with all the things that you had to do? | 0 | 1 | 2 | 3 | 4 |

1. *Rosenberg Self-Esteem Survey* (RSE; Rosenberg, 1965)

Below is a list of statements dealing with your general feelings about yourself. For each question choose from the flowing scale:

|  |  |  |  |
| --- | --- | --- | --- |
| Strongly Disagree | Disagree | Agree | Strongly Agree |
| 0 | 1 | 2 | 3 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | Overall, I am satisfied with myself. | 0 | 1 | 2 | 3 |
| 2 | At times, I think I am no good at all. | 0 | 1 | 2 | 3 |
| 3 | I feel that I have a number of good qualities. | 0 | 1 | 2 | 3 |
| 4 | I am able to do things as well as most other people. | 0 | 1 | 2 | 3 |
| 5 | I feel I do not have much to be proud of. | 0 | 1 | 2 | 3 |
| 6 | I certainly feel useless at times. | 0 | 1 | 2 | 3 |
| 7 | I feel that I am a person of worth, at least on an equal plane with others. | 0 | 1 | 2 | 3 |
| 8 | I wish I could have more respect for myself. | 0 | 1 | 2 | 3 |
| 9 | Overall, I am inclined to feel that I am a failure. | 0 | 1 | 2 | 3 |
| 10 | I take a positive attitude toward myself. | 0 | 1 | 2 | 3 |

1. *Satisfaction with Life Scale* (SWLS; Diener et al., 1985) Below are five statements with which you may agree or disagree. Please be open and honest in your responses. Anchor points for the scale are as follows:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Strongly disagree | Disagree | Slightly disagree | Neither agree nor disagree | Slightly agree | Agree | Strongly agree |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | In most ways, my life is close to my ideal | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | The conditions of my life are excellent | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3 | I am satisfied with my life | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4 | So far, I have gotten the important things I want in life | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5 | If I could live my life over, I would change almost nothing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Part 4: Ethical dilemmas (only in the clinical year)

1. Have you dealt with ethical dilemmas (a conflict between different values, in which there is a choice to be made between two options, neither of which resolves the situation in an ethically acceptable fashion) throughout your veterinary studies? Yes / No
2. If you answered “yes” to the above question, please estimate the number of ethical dilemmas you have dealt with throughout your studies: 1–3 / 4–10 / >10
3. In which year did you encounter dilemmas the most? A / B / C / D
4. What subjects were the source of the dilemmas (please select all that apply):
   1. **Animal treatment dilemmas:**
   * Taking action or intervening contrary to students’ expected role
   * Witnessing inappropriate treatment of sick animals
   * Witnessing a fault in clinical work: negligence or maltreatment of sick animals
   * Issues in treating animals with a terminal condition
   * Euthanasia of healthy animals without owners
   * Welfare of agricultural animals (slaughter, holding conditions, maximizing production over welfare, etc.)
   * Experimenting on animals
   1. **Dilemmas related to animals’ owners**
      * + Sharing information with animals’ owners
        + Issues of trust between the student and the animal’s owner
        + Issues of refusal to treat sick animals by the owners
   2. **Attitudes of veterinary staff toward students**

* Inappropriate staff attitudes toward students: humiliation, sexual harassment
  1. **Conflict between different responsibilities**
  + Students’ family obligations versus obligations to studies
  + Problematic class peers: cheating, not suitable for the profession
  1. **Other**

Part 5: Demographic background (long version)

In order for us to better understand our participants, please answer the following questions. Remember that your responses are completely confidential.

\*1. Last five digits of your ID number (important for correlation among repeated   
 questionnaires across various years of study) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\*2. Year of birth \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\*3. Gender - ( ) Male ( ) Female

4. Year of course: First / Second / Third / Fourth

5. Former higher educational background:

B.A. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

M.A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. What is your political view:

1. Radical left

2. Moderate left

3. Center

4. Moderate right

5. Radical right

6. Unsure

7. In what type of area have you lived *until age 16*?

1. City

2. Community settlement

3. Moshav (Israeli agricultural settlement)

4. Kibbutz (Israeli communal settlement)

5. Other

8. Do you consider yourself:

1. Atheist

2. Secular

3. Traditional

4. Religious

5. Other

\*9. Do you practice any dietary or product-purchasing restrictions?

1. Omnivore

2. Vegetarian

3. Vegan

4. Other (please specify) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. As a child (until age 16), did you or your family keep a pet(s) that you felt fondness   
 toward/considered a companion: 1. Yes 2. No

11. If you answered “yes” to the above question, please identify the pet or pets that you had   
 during childhood / adolescence (please check all that apply):

* Dog
* Cat
* Horse/pony
* Hamster/guinea pig/gerbil
* Parrot/parakeet/other caged bird
* Tropical/marine fish
* Reptiles/amphibians
* Rabbit
* Other (please specify) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. Did you raise any type of animal that you did not consider a pet? (please specify)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. Do you currently own a pet(s)? 1. Yes 2. No

14. If “yes,” please identify the pet(s) that you currently own:

* Dog
* Cat
* Horse/pony
* Hamster/guinea pig/gerbil
* Parrot/parakeet/other caged bird
* tropical/marine Fish
* Reptiles/amphibians
* Rabbit
* Other (please specify) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. Do you raise any type of animal that you do not consider a pet? (please specify)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\*16. What area of veterinary medicine do you hope to specialize in, after you are qualified?

* Small animals
* Agricultural animals
* Equine
* Mixed practice
* Exotic animals
* Other

17. Indicate from the following list, all the persons and/or experiences that had a great influence on your personal and professional values (select all that apply):

* Parents
* Other Family Members
* Practicing Veterinarians
* Peers
* Religion
* Interaction /experience(s) with animals
* Other experiences

18. What are the reasons for your decision to study veterinary medicine (please rate your   
 reasons, 1 is the most important reason)

* Family expectations
* Financial incentives
* A calling to help animals
* Opportunity to practice medicine, but not on people
* Prestige
* Science or research
* Other

19. In case you would not have been accepted to veterinary medicine studies in Israel, would you have applied for veterinary studies outside the country? 1. Yes 2. Not sure 3. No

\*20. Given that the dictionary definition of “empathy” is as follows:

“Understanding of another’s feelings - the ability to identify with and understand another’s   
 feelings or difficulties,” do you consider yourself to be:

* A very empathetic person toward people and animals
* A very empathetic person toward people and somewhat empathetic toward animals
* A very empathetic person toward animals and somewhat empathetic toward people
* A somewhat empathetic person
* Neutral
* A not particularly empathetic person

**Thank you for your cooperation in completing the survey!**

APPENDIX B

The questions included in the Total Attitude Scale (TAS) score:

For questions **1–3**, please use the following choices:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Strongly disagree | Disagree | Neutral or unsure | Agree | Strongly agree |
| 1 | 2 | 3 | 4 | 5 |

1. The predominant methods that are currently used to produce animal products provide an appropriate level of animal welfare in the:

[ ] Beef cattle industry   
[ ] Dairy cattle industry  
[ ] Layer chicken industry   
[ ] Meat bird industry  
[ ] Sheep industry   
[ ] Swine industry

1. This next question relates to some of your values regarding various aspects of animal welfare. Please mark your agreement with every statement:

[ ] Agricultural animals should have freedom to express a majority of their normal   
 behavioral repertoire.  
 [ ] Agricultural animals are entitled to a quick and humane death at the end of their   
 lives.

1. These next questions relate to some of your beliefs regarding various aspects of animal welfare. Please mark your agreement with every statement:

[ ] If animals are producing (i.e., gaining weight, producing eggs, etc.), that means   
 they have good welfare.  
[ ] Agricultural animals have individual temperaments.  
[ ] Agricultural animals can experience something akin to boredom.  
[ ] It is important to meet the majority of behavioral needs of agricultural   
 animals (behavioral needs are here defined as those behaviors in which animals are highly motivated to be engaged).

1. An earlier survey of animal science students revealed several current animal production practices/outcomes that students felt were of concern. The following list represents some of the more frequently mentioned items. Please rate the following practices/outcomes using these choices:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Strongly disagree it is a concern | Disagree it is a concern | Not familiar enough with practice to form an opinion | Agree it is a concern | Strongly agree it is a concern |
| 1 | 2 | 3 | 4 | 5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | Branding of beef cattle | 1 | 2 | 3 | 4 | 5 |
| 2 | Dehorning without local anesthetic | 1 | 2 | 3 | 4 | 5 |
| 3 | Levels of lameness in dairy cattle | 1 | 2 | 3 | 4 | 5 |
| 4 | Tail docking in dairy cattle | 1 | 2 | 3 | 4 | 5 |
| 5 | Toe trimming in poultry | 1 | 2 | 3 | 4 | 5 |
| 6 | Beak trimming in poultry | 1 | 2 | 3 | 4 | 5 |
| 7 | Cage space for layers | 1 | 2 | 3 | 4 | 5 |
| 8 | Gestation crates for sows | 1 | 2 | 3 | 4 | 5 |
| 9 | Early weaning in pigs | 1 | 2 | 3 | 4 | 5 |
| 10 | Castration without anesthetic | 1 | 2 | 3 | 4 | 5 |
| 11 | Flooring effects on lameness in intensively farmed animals | 1 | 2 | 3 | 4 | 5 |
| 12 | Poor or indifferent stockmanship | 1 | 2 | 3 | 4 | 5 |
| 13 | Methods of transportation to slaughter | 1 | 2 | 3 | 4 | 5 |

1. Cronbach’s α reliability coefficient of this scale varied between 0.83 and 0.92. [↑](#footnote-ref-1)