**CHAPTER 3 – MATERIALS AND METHODS**

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

**Design**

In order to best evaluate the development of the attitudes of Israeli veterinary students towards 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 chosen together with a cross-sectional study.

In general, it takes four years to graduate in Veterinary Medicine, during which the students study 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 the psychological well-being of the same students over their full course of studies. Consequently, the differences observed in the group will be less likely to be 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 to compare the students’ attitudes and well-being across the years, which may further validate the results yielded 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 a homogenous group, as over 96% of them are Jewish and Israeli.

*The study sample*

During the 2010-2011 academic year, the average class size was ~55 students. The study aimed to include all the students (n≈220) who were enrolled in veterinary training in this 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 1st semester.

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

**Time of measurement (time-point) 3**: Second year, June 2012 at the end of the 2nd semester.

**Time of measurement (time-point) 4**: Forth year, May-June 2014 towards the end of the 2nd semester.

A total of 422 surveys were collected at all four time points.
The age of the students at the beginning of their training (baseline) was 29.64 years (SD=3.14). **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 between the students in each year of their studies with regards to these variables, except their age and their preferred type of employment following graduation. Students age varied in accordance with their level of progress in training, (p<0.001) and a smaller percentage of students in Year A preferred to work with small animals after their graduation, compared to their counterparts in Years B-C (p=0.003).

**Table 2: Demographic characteristics of the research sample. Values are counts and percentages- n, (%) or means and standard deviations- M (SD)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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 exact=7.9, p=0.51 |
| Atheist | 7, (12%) | 12, (22%) | 7, (15%) | 5, (11%) |  |
| Secular | 31, (52%0 | 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%) |  |
| Residency 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%) |  |
| Centre | 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 typeof 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 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 exact=1.1, p=0.82 |
| Religion | 1, (2%) | 0, (0%) | 0, (0%) | 2, (5%) | Fisher exact=3.5, p=0.13 |
| Interaction/ experience(s) 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 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 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 exact=14.0, p=0.21 |
| Financial incentives | 1, (2%) | 0, (0%) | 0, (0%) | 0, (0%) |  |
| Feeling 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 |

**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 existed and been used in previous research, preferably within the field of veterinary medicine; 2) The instrument had acceptable reliability and validity; 3) The instrument was brief, with as few items as possible; 4) The instrument could be used without copyright conflict;

The survey was designed to collect background and demographic data of the study sample, together with data probing into different domains that concern veterinary students: empathy with animals, knowledge and attitudes towards agricultural animals' welfare, students’ psychological well-being 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 was comprised of 21 demographic questions, some of which were asked only in the first semester of the first year, constituting as such the baseline information for this study. Other demographic questions were asked repeatedly in all four research time-points in order to follow potential changes in responses over time. The questions chosen aimed to address possible and relevant correlations between demographic background and attitudes towards animals, already reported in human-animal relationship literature (Serpell, 2005).

Questions consisted of five last ID digits for future tracking of students, year of birth, gender, current year in training, prior education attained, relationship status, residence in childhood (rural vs. non-rural background), level of religiosity, political ideology, having pets in childhood and as a veterinary student, species of pets held in childhood and today, subjective importance of having a pet in childhood, reasons for choosing a veterinary career, influences on the decision to pursuit a veterinary career, future animal practice plans (e.g. small animals, farm animals), current diet and self-assessed level of empathy towards people and animals. This part also included questions tapping into a variety of ethical dilemmas that vet students may encounter during their studies. (**See full details in Appendix A, pp.** ).

*II. Empathy with Animals*

‘The Animal Empathy Scale’ (Paul, 2000) was used in the pioneering study of Paul and Podberseck (2000), measuring veterinary students’ attitudes towards farm animal welfare in the UK. This 28-item scale was developed by Paul (2000) after Merhabian & Epstein (1972) as ‘survey measure of emotional empathy’ and is used in the current study to assess Israeli veterinary students' empathy with animals.

The scale consists of 28 statements expressing empathetic sentiments towards 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 toward Agricultural Animals’ Welfare*

This part consisted, with permission from the authors, of parts from relevant surveys developed by Heleski (2004) and Paul & Podbeseck (2000). These surveys were composed to evaluate attitudes toward agricultural animals’ welfare, including those of veterinary students. The total number of questions in this part is 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 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 7- point scale. The first statement representing 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 representing a midpoint position ("I believe in using animals for the greater human good -could be with regards to food production, for providing work, for recreation purposes, etc.- but we have an obligation to provide for the majority of their physiological and behavioral needs"; the seventh statement representing 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 modified from a survey conducted by Paul & Podberseck (2000), that were also used in Heleski & Zanella (2004) survey, pertaining attitudes of veterinary students toward farm animal welfare. The questions related to how different animal species potentially feel the sensation of pain, for example: “Do you think most pigs can feel the sensation of pain?”. Responses consisted of: "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 previous survey results; 2. In an attempt to create a hierarchy of different species perceiving sensation of pain and boredom. Thus, species were added that were not included in the original surveys conducted by Paul and Podberseck (2000) and Heleski and Zanella (2004), and the following categories were created: 1. Small animals (rodents); 2. Agricultural animals (cattle, sheep, pigs); 3. Chickens and Turkeys (birds); 4. Pets (cats and dogs); 5. Monkeys.
7. Eight questions relating to how different animals potentially experience or do not experience boredom (Paul & Podberseck, 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 the questions relating to the perceived sensation of pain.

Overall, the majority of questions in this part could be 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 concerning 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 agricultural animals’ welfare in 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 agricultural animals’ welfare: 1. ‘If animals are producing (i.e. gaining weight, 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 defined here as behaviors animals are highly motivated to engage in.)’.
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 appears in the original scale are: 1. Questions related to animal products’ consumption behavioral intentions (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; 2. Questions related to the ‘Five Freedoms’, because of a ceiling effect that occurred in the analysis of these statements (meaning that almost all the students scored maximum on the observed variables). This made discrimination among subjects at the top end of the scale impossible.

In the current study, Cronbach α reliability coefficient of the TAS within all time-points across all vet school years of study (A-D) was greater than 0.80, indicating of a good level of reliability (See additional details in table XX).

*Part IV: Stress and Well-Being among Veterinary Students*

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

Veterinary Studies Related Stress (VSRS)

This instrument, originally developed by Paul & Podberseck (2000), includes 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). In the current study, Cronbach α reliability coefficient of the VSRS within all time-points across all vet school years of study (A-D) was greater than 0.70, indicating of a satisfying level of reliability, except three time-points where it ranged between 0.50-0.60. Individual scores on the VSRS can range from 9 to 45 with higher scores indicating higher stress.

Perceived Stress Scale (PSS)

This instrument, developed by Cohen, Kamarck, & Mermelstein (1983) asks the participants to respond to statements regarding feelings and thoughts they had experienced during the past month. The authors specify that “PSS items are designed to tap the degree to which respondents found their lives unpredictable, uncontrollable, and overloading” (Cohen, Kamarck, & Mermelstein, 1983, p. 387).

The original PSS is comprised of 14 five-point Likert-type scaled items. However, Cohen and Williamson (1988) recommended to use a slightly shorter version (PSS10). The PSS has been utilized extensively in eight studies between 1986 and 1991 (Hewitt, et al., 1992), and is considered to be reasonably valid and reliable, with a coefficient alpha reliability ranging between 0.75 (Cohen & Williamson, 1988) and 0.88 (Mimura & Griffiths, 2004), and a test-retest correlation ranging between 0.55 and 0.85 (Cohen et al., 1983). Cohen, Kessler, and Gordon (1995) deemed the test to be appropriate for all age groups. In the current study, Cronbach α reliability coefficient of the PSS within all time-points across all vet school years of study (A-D) was greater than 0.80, indicating of a good level of reliability, except two time-points in which it ranged between 0.38-0.69. Individual scores on the PSS-10 can range from 0 to 40 with higher scores indicating higher perceived stress.

Satisfaction with Life Scale (SWLS)

This instrument, developed by Diener, Emmons, Larsen, & Griffin, 1985, consists of five statements to which respondents rank their level of agreement on a seven-point Likert-type scale. It has been found to assess an individual’s global judgment of life satisfaction in a reliable manner and is a cognitive, rather than an affective, assessment (Pavot & Diener, 1993). An initial study by the scale developers revealed a two-month test-retest correlation coefficient of 0.82, and an internal coefficient alpha of 0.87. A later study by Pavot et al. (1991) provided further support for 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, Havighurst, and Tobin, 1961). In a 1993 review article, Pavot and Diener (1993) provided extensive normative data for the SWLS, listing all the studies where the SWLS had been utilized (25). This article reported internal consistency coefficients ranging between 0.79 and 0.89 )Nelsen, 2006(. In the current study, Cronbach α reliability coefficient of the SWLS within all time-points across all vet school years of study (A-D) was greater than 0.80, indicating of 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 chosen for this study because it has been used previously in a large study of veterinary students (Cron et al., 1999), and due to its well-established scales’ reliability. (Cronbach 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, Cronbach α reliability coefficient of the RSE within all time-points, across all vet school years of study (A-D), was greater than 0.80, indicating of a good level of reliability, except two time-points where it was 0.64. The scale ranges from 0 to 30, with 30 indicating the highest score possible.

Table 3 presents the time-points in which the instruments above were given during 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 | √ | √ | √  | √ |
|  | 2nd sem. | √\* | √\* | √\* | √\* |
|  | 2nd yr. | √\* | √\* | √\* | x |
|  | 4th yr. | √\* | x | x | x |
| Ethical Dilemmas  | Baseline | x | x | x | x |
|  | 2nd sem. | x | x | x | √ |
|  | 2nd yr. | x | x | x | x |
|  | 4th yr. | √ | x | x | x |
| Empathy with Animals | Baseline | √ | √ | √ | √ |
|  | 2nd sem. | x | x | x | x |
|  | 2nd yr. | x | x | x | x |
|  | 4th yr. | x | x | x | x |
| Knowledge and Attitudes toward Animal Welfare scales | Baseline | √ | √ | √ | √ |
|  | 2nd sem. | √ | √ | √ | √ |
|  | 2nd yr. | √ | √ | x | x |
|  | 4th yr. | √ | x | x | x |
| Total Attitude Scale (TAS) | Baseline | √ | √ | √ | √ |
|  | 2nd sem. | √ | √ | √ | √ |
|  | 2nd yr. | √ | √ | x | x |
|  | 4th yr. | √ | x | x | x |
| Veterinary Studies Related Stress (VSRS) | Baseline | √ | √ | √ | √ |
|  | 2nd sem. | √ | √ | √ | √ |
|  | 2nd yr. | √ | √ | x | x |
|  | 4th yr. | √ | x | x | x |
| Perceived Stress Scale (PSS) | Baseline | √ | √ | √ | √ |
|  | 2nd sem. | √ | √ | √ | √ |
|  | 2nd yr. | √ | √ | x | x |
|  | 4th yr. | √ | x | x | x |
| Satisfaction with Life Scale (SWLS) | Baseline | √ | √ | √ | √ |
|  | 2nd sem. | √ | √ | √ | √ |
|  | 2nd yr. | √ | √ | x | x |
|  | 4th yr. | √ | x | x | x |
| Rosenberg Self-Esteem Survey (RSE) | Baseline | √ | √ | √ | √ |
|  | 2nd sem. | √ | √ | √ | √ |
|  | 2nd yr. | √ | √ | x | x |
|  | 4th yr. | √ | x | x | x |

\* Short version of the demographic survey.

**Procedure**

The method of data collection was almost similar in both the cross-sectional and the longitudinal studies. In both cases the researcher contacted the veterinary students’ class representatives (each year has one representative from the class) and consulted them about the lectures with the highest number of students attending. Based on this information, the researcher contacted the instructor of the class by e-mail, with a request for permission to distribute the surveys during his/her class. On the chosen date, the researcher went to each classroom, gave a brief description of the survey, emphasized that completing 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 benefit 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 the survey was voluntary and completely confidential, and that there would be no negative ramifications to anyone who chose not to 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 their completion of the survey in the second, third and fourth time-points. The rewards varied over the years of the 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, and is taught in the Hebrew University veterinary hospital, located in the Ministry of Agriculture and Rural Development campus area, in the city of Rishon LeZion. Unlike the pre-clinical years, when 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 gather them in one room and have them fill a 15-minute-long 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 4th year (both in 2011 cross sectional study, and in 2014, the 4th time-point in the longitudinal study) were asked to fill an online version of the survey. In order to maintain their anonymity and privacy the students received a forward e-mail from the veterinary school students’ coordinator, which contained an embedded link to the survey on a Hebrew based survey website. After the data was downloaded, checks were run to eliminate or correct any problem.

**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-square test or Fisher exact, as appropriate. Associations between ordinal variables of interest were analyzed using Mann-Whitney test. Longitudinal analysis between continuous variables of interest, time of measurement, year of study and relevant covariates was analyzed using mixed linear model for repeated measures. All analyses were performed using SPSS 21, 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 agricultural animals’ welfare, and psychological well-being across their studies in veterinary school.

This is the first research of its kind to be carried out on Israeli veterinary students’, and your answers are extremely important for helping us better understand this area. However, your participation in this survey is completely voluntary, and you can retire from it at any time.

The survey consists of four parts: The first two part relate to your knowledge and attitudes toward agricultural animals’ welfare; the third part relates to your psychological well-being, and the fourth part relates to your background.

There are no correct answers to the questions you will be asked. 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 5 digits of your ID number only for correlating your answers to you in different times of measure, across your studies.

We estimate this survey will take 15-20 minutes to complete. Please bear in mind that you have the option of not answering certain questions and can discontinue participation at any time.

If you have questions regarding this research project, you can contact me at tamar.meri@mail.huji.ac.il or 054-6440441. This is also the way 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 upset 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 | l 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 towards 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
 behavioural 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 behavioural needs possessed by agricultural
 animals (behavioural needs are defined here as those behaviours animals are highly
 motivated to engage in).

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 anaesthetic | 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 anaesthetic | 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 in regards to
 food production, for providing work, for recreation 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 boredom? | 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 about your current stress level, self-esteem and life satisfaction.

1. *Veterinary Studies Related Stress* (VSRS; Paul and Podberseck, Unpublished)

Being a student is often one of the more stressful times of a persons’ life, especially for those undertaking vocational 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 work load | 1 | 2 | 3 | 4 | 5 |
|  3 | Dealing with 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, Kamarck, & Mermelstein, 1983)

The questions in this scale ask you 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, don’t try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate. For each question choose from the following alternatives:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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 | On the whole, 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’m 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 | All in all, 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, Emmons, Larsen, & Griffin, 1985) Below are five statements with which you may agree or disagree. Please be open and honest in your responding. 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 (multi select answer options):
	1. **Animals' treatment dilemmas:**
	* Taking action or intervening in opposite 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 in terminal condition.
	* Euthanasia of healthy animals with no owners.
	* Agricultural animals' welfare (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 animals' owner.
			+ Issues of refusing to treat sick animals by the owners.
	2. **Veterinary staff attitudes’ toward students**
* Inappropriate staff attitudes towards students: Humiliation, sexual harassment.
	1. **Conflict between different responsibilities**
	+ Students' family obligation versus his studies obligations.
	+ 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. Five last digits of your ID number (important for correlation between repeated
 questionnaires across years of study) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

\*3. Your gender - ( ) Male ( ) Female

4. Year of course: 1st year/ 2nd year/ 3rd year/ 4th year

5. Former higher educational background:

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

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

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

6. What is your political view:

 1. Radical left

 2. Moderate left

 3. Centre

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

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 a type of animal that you did not consider as a pet (please specify):

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

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

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

* 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 a type of animal that you do not consider as a pet (please specify):

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

\*16. What area of veterinary medicine do you hope to specialize in when you qualify?

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

17. Indicate from the following list of choices all the persons and/or experiences that had had
 great influence on your personal and professional values (multi select answer options):

* 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 not on people
* Prestige
* Science or research
* Other

19. In case you would not been accepted to veterinary medicine studies in Israel, would you
 apply for vet 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 towards people and somewhat empathetic toward animals
* A very empathetic person towards 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
 behavioural 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 behavioural needs possessed by agricultural
 animals (behavioural needs are defined here as those behaviours animals are highly
 motivated to engage in).

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