"I got into the industry to make a difference to the welfare and rights of animals and that is what I am going to do. No matter the toll it takes on me.": A Mixed Methods Exploration of Moral Distress, Wellbeing and Attrition Among Veterinary Students in Australia

[redacted]

The University of Adelaide

This thesis is submitted in partial fulfillment of the Honours Degree of Bachelor of Psychology (Advanced)

Word Count: 6990

Table of Contents

List of Figures

List of Tables

Abstract

Moral distress (MD) is the experience of psychological disequilibrium that can result when individuals cannot enact their preferred moral behaviour when faced with an ethical dilemma. MD is an emerging area of interest among veterinarians as they face the unique ethical challenge of balancing the welfare of the animals they treat against the demands of their owners. Limited research shows MD to be associated with poorer wellbeing, perfectionism, and indicators of industry attrition; however, it has not been widely investigated among veterinary students. Therefore, this cross-sectional mixed methods study aimed to explore MD and its associations with wellbeing and attrition in this population. A sample of 158 veterinary students from across Australia, aged 18 to 53, participated. Students reported low MD (M = 69.3) and 39% of students identified companion animal placements as the most morally distressing. Completing more weeks of student placement and greater veterinary employment experience predicted higher MD. MD was associated with lower wellbeing but not attrition. Participants reported average levels of wellbeing; however, 25% were categorised as experiencing psychological distress. In qualitative findings, 36% of students indicated a desire to remain in the industry to make positive change, with ethical dilemmas commonly acting as a 'Motivator to improve the industry'. Further research is recommended to investigate whether underlying trait optimism or emotional intelligence explains this desire. With additional longitudinal research to corroborate these results, the findings of this study may inform future education and workplace policies on supporting veterinary students to manage the challenges associated with MD.

Keywords: veterinary student; moral distress; wellbeing; attrition; mixed methods

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any University, and, to the best of my knowledge, this thesis contains no material previously published except where due reference is made. I give permission for the digital version of this thesis to be made available on the web, via the University of Adelaide's digital thesis repository, the Library Search, and through web search engines, unless permission has been granted by the School to restrict access for a period of time.

[redacted]

September 2023

Contributor Roles

ROLE	ROLE DESCRIPTION	STUDENT	SUPERVISOR
CONCEPTUALISATION	Ideas; formulation or evolution of overarching research goals and aims.	X	X
METHODOLOGY	Development or design of methodology; creation of models.	X	X
PROJECT ADMINISTRATION	Management and coordination responsibility for the research activity planning and execution.	X	
SUPERVISION	Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team.		X
RESOURCES	Provision of study materials, laboratory samples, instrumentation, computing resources, or other analysis tools.	N/A	N/A
SOFTWARE	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code.	X	
INVESTIGATION	Conducting research - specifically performing experiments, or data/evidence collection.	X	
VALIDATION	Verification of the overall replication/reproducibility of results/experiments.	X	X
DATA CURATION	Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later re-use.	X	
FORMAL ANALYSIS	Application of statistical, mathematical, computational, or other formal techniques to analyse or synthesise study data.	X	
VISUALISATION	Visualisation/data presentation of the results.	X	
WRITING – ORIGINAL DRAFT	Specifically writing the initial draft.	X	
WRITING – REVIEW & EDITING	Critical review, commentary or revision of original draft	X	X

"I got into the industry to make a difference to the welfare and rights of animals and that is what I am going to do. No matter the toll it takes on me." A Mixed Methods Exploration of Moral Distress, Wellbeing and Attrition Among Veterinary Students in Australia

Veterinary practice is an occupation at high risk for chronic stress and burnout (Pohl et al., 2022), with veterinarians commonly experiencing elevated rates of depression, anxiety, suicidality and poor wellbeing (Connolly et al., 2022; Whitnall & Simmonds, 2021). According to a systematic review of 19 studies (Platt et al., 2010), between 0-43% of veterinarian deaths globally were due to suicide, with the suicide rate in Australian veterinarians approximately four times higher than in the general population (Jones-Fairnie et al., 2008). The pressures of this industry are compounded by the shortage of veterinarians being anecdotally reported across the globe despite a 9.5% rise in the number of registered professionals in Australia between 2018 and 2021, now recorded at 13,993 in 2021 (The Australian Veterinary Association [AVA], 2021). However, concerning contradictory figures were reported in the most recent national survey (N = 1,236) which reported a third (31%) of advertised veterinary positions took over 12 months to fill in 2021 (AVA, 2021).

Recently, a survey of 800 veterinarians found 27% intended to leave the industry, with 41% being mid-career professionals who contribute valuable years of experience (McArthur et al., 2021). Additionally, Nett et al. (2015) found 16% of veterinarians (N=11,000) who intended to leave the profession reported serious psychological stress, compared to only 9% of those who intended to stay (Nett et al., 2015). Risk factors for poor wellbeing and high attrition have been suggested (i.e., long working hours, staff shortages, difficult client expectations); however, preliminary research highlights that it is the unique ethical challenges veterinarians face while navigating conflicts between the wants of their clients, and the welfare of the animals they are treating, that needs exploration (Batchelor & McKeegan,

2012; Kogan & Rishniw, 2023). Therefore, the navigation of ethical conflicts and subsequent feelings of 'moral distress' will be investigated in the present study as a contributor to the poor wellbeing of veterinarians and veterinary professionals in training. This research direction follows a review by Montoya et al. (2019), which identified that relationships between moral distress, wellbeing, job satisfaction, and attrition are yet to be examined.

Moral Distress

Moral distress is the "painful psychological disequilibrium that results from recognising the ethically appropriate action, yet not taking it" (Wilson, 2018, p. 260) due to constraining organisational, personal or client factors (Gibson & Quain, 2022). It is a cumulative occupational stress describing the feelings of powerlessness, anger, and guilt that build within healthcare and veterinary professionals when they engage in behaviours and professional practices that violate their personal ethical beliefs and moral standards (Crane et al., 2013; Kogan & Rishniw, 2023).

Throughout the literature, researchers use many terms interchangeably to explain moral distress. For clarity and simplicity and to ensure consistency with recent research approaches, the current study uses the terms "moral conflict", "moral distress" and "ethical dilemma" as suggested by Montoya et al. (2019, p. 1). Ethical dilemma occurs when an individual deliberating an ethical decision is uncertain about the correct action to take and has no obvious way to prioritise one choice over another (Betzler, 2001; Montoya et al., 2019). Moral conflict arises during this deliberation process when an internal or external factor constrains the individual's decision-making, ultimately leading them towards either a state of moral distress or moral comfort (a feeling of satisfaction and acceptance) if the individual perceives their decision to be appropriate (Haghighat et al., 2020; Montoya et al., 2019).

Moral Distress in Healthcare

Originally, moral distress was primarily investigated among professionals employed in human healthcare settings (Corley, 2002). Thus, the understanding of moral distress among veterinarians is rooted in the literature from the human healthcare industry. This literature reports some modifying factors influencing the occurrence of moral distress in healthcare professionals include gender, personality, moral competency, occupational factors (i.e., longer weekly working hours), professional knowledge and years of work experience (Corley, 2002; Crane et al., 2015). Moral distress in healthcare professionals is associated with burnout, increased staff turnover, job dissatisfaction and disengagement, loss of self-worth, social isolation, and overall poor wellbeing (Ando & Kawano, 2018; Corley, 2002; Montoya et al., 2019). Veterinarians face some of the same ethical dilemmas as healthcare professionals, alongside moral conflicts unique to their own industry. Therefore, the modifying factors and troubling impacts of moral distress in healthcare literature propose potential implications for veterinarians.

Moral Distress in Veterinarians

Veterinarians face a unique and complex moral dilemma in their day-to-day work; when making treatment decisions, they must decide whether to give primary consideration to the animal they treat (the patient) or their client (the animal's owner; Batchelor & McKeegan, 2012). According to Batchelor and McKeegan (2012), who surveyed 58 veterinary surgeons in the United Kingdom (UK), only 5% of participants reported experiencing no ethical dilemmas in a typical week. Despite the frequency of ethical dilemmas experienced in the industry, Foote (2023) observed low moral distress in a sample of 370 veterinary professionals in the UK. However, alongside veterinarians, Foote (2023) included other veterinary professionals who may have less responsibility for ethical decision making; thus, these findings may be less relevant.

Though there is evidence of the existence and prevalence of these unique ethical dilemmas, research on moral distress in veterinarians is limited and needs further exploration. Researchers suggest potential moral conflicts may include administering unnecessary, inappropriate, or futile treatments at the wishes of the client or due to organisational policy, performing unnecessary euthanasia, observing and reporting animal abuse, and following conflicting advice from colleagues (Ashall, 2023; Batchelor & McKeegan, 2012; Moses et al., 2018). A frequently reported moral conflict, particularly when working with companion animals, is the dilemma of providing care to patients within the constraints of the client's financial circumstance (Ashall, 2023; Graaf, 2005; Kondrup et al., 2016). This conflict was viewed by 77% of participants (N = 1,122) in a recent survey as a moderate or primary contributor to professional burnout (Kipperman et al., 2017).

It is important to note there may be industry-specific moral conflicts for veterinarians that have yet to be investigated in relation to moral distress. Currently, no published validated scale for measuring moral distress among veterinarians exists, which has stifled research, impacted the validity of the few available studies and hampered study comparisons. In recent unpublished doctoral research Montoya (2022) created a scale for measuring moral distress in veterinary clinicians (the MDS-V); to date, this has only been used in their pilot study.

Impacts of Moral Distress on Veterinarians

In a study of 1,919 veterinarians in the United States of America (USA), Kogan and Rishniw (2023) used a modified version of the MMD-HP to establish that moral distress was associated with less professional fulfilment and greater work exhaustion, interpersonal disagreement, and burnout (all indicators of high occupational stress and poor wellbeing). Similar to these findings, a mixed methods study by Moses et al. (2018) of veterinarians in North America (N = 889) established a link between moral distress and compassion fatigue, reporting 70% of participants felt moderate to severe stress due to work constraints

preventing them from providing appropriate care. Furthermore, recent qualitative research detailed accounts of how moral stress led to feelings of powerlessness, anger, intense frustration, failure, guilt, and sleeplessness (Ashall, 2023). It is worth noting this study investigated moral stress (conceptualised as a milder state of stress elicited by moral conflict) rather than distress (Montoya et al., 2019).

It is difficult to define the direction of the relationship between moral distress and these indicators of lower wellbeing without longitudinal data; morally distressing experiences could impact wellbeing, or, existing poorer wellbeing could exacerbate moral distress. Additionally, though research with healthcare professionals indicates moral distress is associated with increased job attrition, the relationship between moral distress and attrition in veterinarians has only been investigated in one unpublished dissertation ($N = 600$) which suggested no significant relationship (Montoya, 2022).

Modifying Factors for Moral Distress in Veterinarians

Researchers have identified that modifying factors for moral distress within veterinarians include age, gender, perfectionism, type of animal industry/practice, and experience in the field; however, these factors are drawn from a very small literature base (Batchelor & McKeegan, 2012; Crane et al., 2015; Kogan & Rishniw, 2023; Montoya, 2022). Kogan and Rishniw (2023) found younger female veterinarians reported significantly higher moral distress than older male veterinarians ($N = 1{,}919$). Foote (2023) also identified that veterinary professionals aged 25-34 presented the highest risk for moral distress, with a decline in risk observed as age increased beyond this point.

Trait perfectionism has been linked to veterinarian moral distress; Crane et al. (2015) found perfectionism mediated the impact of moral distress upon wellbeing (and was associated with greater adversary effects).These findings suggest perfectionism enhances veterinarians' vulnerability to experiencing greater distress when exposed to moral conflicts.

Perfectionism may play a role in moral distress because it often features a tendency to apply rigid and excessive performance standards to oneself and to undertake continuous and harsh self-evaluation (Crane et al., 2015; Lewis & Cardwell, 2020).

Finally, though Batchelor and McKeegan (2012) found no significant differences between the frequency of ethical dilemmas between different practice types (e.g., small animal, large animal, and equine), there are unique challenges associated with working in food production/rural settings versus an emergency veterinary hospital or companion animal practice (where euthanasia in particular is a frequent stressor; Matte et al., 2019). Research also found participants' self-reported anxiety in response to moral conflict decreased as the years since graduation increased (Crane et al., 2015). Ultimately, there is insufficient high-quality evidence to reach a conclusion about these factors yet.

Moral Distress in Veterinary Students

Despite younger age and less industry experience being noted as potential risk factors for moral distress, scarce research has examined moral distress in a population likely to fall into these categories—veterinary students. A study ($N = 148$) of first- and final-year students from three cohorts in Australia revealed this population relayed sensitivity to animal ethics issues, which was significantly related to moral distress, and 69% of participants reported having experienced moral distress regarding the treatment of animals in the general community (Verrinder & Phillips, 2014). The same study identified that students who had more farm experience were less likely to agree that veterinarians face animal ethics and protection challenges (thus, they could potentially be experiencing less moral distress), and students with greater companion animal experience more strongly agreed that they should prioritise the interests of their animal patient over their client (Verrinder & Phillips, 2014).

Only 45% of the students felt competent in their ethical decision-making skills, with males reporting more competence than females (Verrinder & Phillips, 2014). Students in their

final year also showed greater concern for dilemmas involving companion animals, whereas first-year students were more concerned about farm/production animals (Verrinder & Phillips, 2014). However, the construct validity for moral distress in the study may not be very high due to the lack of a validated scale for use with veterinarians, the small sample size, and the inclusion of only two year levels. These findings and methodological challenges, coupled with sparse research in veterinary students, highlight the need for exploration in a larger, more diverse sample of veterinary students.

There is also a paucity of literature examining perfectionism in veterinary students in Australia. Elevated perfectionism has been observed in veterinary students from the UK and USA (Lewis & Cardwell, 2020; Zenner et al., 2005). Crane et al. (2015) found average perfectionism was associated with moral distress in practising veterinarians. Perfectionism in Australian veterinarian students has not been explored, nor in the context of moral distress, despite the evidence indicating that it negatively impacts more experienced veterinarians.

Veterinary Student Wellbeing and Attrition

Veterinary students, particularly international students, often report higher psychological distress than the general Australian population and practising veterinarians, with females reporting significantly higher distress than males; the current study examines a global evidence base to improve the generalisability of findings to international students (Yang et al., 2019). This finding is consistent globally; for a sample of veterinary students in the UK ($N = 820$), wellbeing was significantly lower than population averages (Lewis & Cardwell, 2018). Likewise, in the USA, veterinary student stress is significantly elevated above general population norms (particularly for females; Nahar et al., 2019). Notably, a relationship has been identified between excessive stress and increased doubt about continuing veterinary study (Dilly et al., 2016).

Poor mental health and wellbeing in veterinary students are associated with burnout and compassion fatigue before they are even qualified and practising, and without seeking help, this could potentially lead to future problems with attrition (McArthur, Andrews et al., 2017). McArthur, Andrews et al. (2017) reported within a sample of 193 Australian veterinary students, 30% were at high risk of burnout, and 52% at risk of experiencing compassion fatigue in their early careers. From what is known of the impacts of moral distress in healthcare and practising veterinarians, it is plausible the concerning wellbeing statistics (and potential risk for attrition) in veterinary students may be related to moral distress and managing animal ethical issues. However, moral distress may serve as a motivating factor for students to continue in the field, as it is associated with taking action towards resolving issues related to animal ethics and treatment within the community (Verrinder & Phillips, 2014).

The Present Study

At the time of writing, no research, outside of Verrinder and Phillips (2014), has examined moral distress within Australian veterinary students. Given the serious impacts potentially associated with moral distress and the extreme gaps in the literature, the current study aims to provide novel insight into moral distress in the context of wellbeing and attrition within this population. The results will contribute to a very sparse theoretical base, with the objective of developing deeper understanding of the attrition and mental health crisis within the Australian veterinary industry. Findings may inform educational policymakers who seek to follow national recommendations for improving self-awareness for veterinarians and incorporation of wellbeing psychoeducation within veterinary degrees (AVA & Superfriend, 2021).

Specifically, this study seeks to examine the following questions in veterinary students in Australia:

1. What level of moral distress is reported?
2. What factors are associated with moral distress?
3. What level of wellbeing is reported, and how is it related to moral distress?
4. What is the relationship between moral distress and intention to remain in the veterinary industry?

Method

Participants

Participation criteria included studying a veterinary degree in Australia leading to qualification as practising veterinarian, fluency in English, being aged 18 and over, and completion of at least one week of placement. Two hundred and seventy-five people commenced the survey; n = 117 for non-completers, with the final sample comprising 158. For study inclusion, participants must have completed the MDS-V in full. Completers and non-completers did not differ in demographic characteristics (i.e., age, gender, sex, ethnicity).

Table 1 reports the demographic characteristics of the final sample, which included 140 females (88.6%) and 17 males (10.8%), aged 18-53 (M = 24.4, SD = 4.8); three participants' gender differed from the sex assigned at birth. Most participants were Australian (63.5%); 67.1% relocated to or within Australia to complete their studies. Most were undertaking postgraduate study (52.9%) and studying and working part-time (69%).

Table 1

Demographic Characteristics of Study Population (N =158)

Characteristics	*n*	%
Ethnic Heritage (*n* = 156)		
Australian	99	63.5
Asian	24	15.4
European	20	12.8
Indigenous Australian	4	2.6
African	2	1.3
Maori or Pacific Islander	1	0.6
Other[a]	5	3.2
Country of Birth (*n* = 137)		
Australia	104	75.9
Country other than Australia	33	24.1
Relationship Status		
Single	63	39.9
In a relationship/Married	95	60.1
Employment Status		
Study only	36	22.8
Study and part-time work	109	69.0
Study and full-time work	9	5.7
Other[b]	4	2.5
Relocation Type		
Relocated internationally	15	9.5
Relocated interstate	35	22.2
Relocated within original state	50	31.6
Relocated (unspecified)	6	3.8
Did not relocate	52	32.9
Current Residence (*n* = 151)[c]		

Urban Australia	95	62.9
Regional/Remote Australia	56	37.1
Previous Residence (if relocated) (n = 101)[c]		
Urban Australia	49	48.5
Regional/Remote Australia	37	36.6
International	15	14.9
Current Degree Level (n = 157)		
Undergraduate	74	47.1
Postgraduate	83	52.9

Note: N = 158 unless otherwise indicated. Percentage values were calculated using the valid n of responses for each item as specified.

[a] Other responses reported include “Central Asian/Russian/Siberian”, “Australian/Chinese”, “Australian/American”, and “Asian/European”. [b] Other responses reported include “Full time athlete and study”, “Part time study and looking for work” , “Study and sole parent” and "Full time work as a vet nurse between semesters”.

[c] Location remoteness calculated via postcode according to most recently available 2016 Remoteness Area data from Australian Bureau of Statistics (2018).

Materials

An online cross-sectional study-specific survey was created and hosted on Qualtrics XM (Appendix A). Study design and measures were informed by previous literature exploring moral distress in practising veterinarians (Batchelor & McKeegan, 2012; Crane et al., 2015; Foote, 2023; Kogan & Rishniw, 2023; Matte et al., 2019; Montoya, 2022). The survey comprised demographics, veterinary experience, moral distress, perfectionism, and wellbeing, followed by open-response questions about the relationship between observing animal treatment that contradicts participants’ ethical/moral values and intention to remain in the veterinary industry. The measures used for each variable are detailed below. Unless

otherwise indicated, for all multi-item measures item scores were summed to create a total score; higher scores indicate greater endorsement of each variable.

Demographic Information

Participants responded to 10 demographic items, including age, sex, gender, country of birth, ethnicity, relationship status, employment status, current postcode, and previous postcode if applicable (to confirm type of relocation), relocation status (i.e., movement within their state, or movement between states/countries, to pursue veterinary studies).

Veterinary Experience

Data about veterinary experience was gathered using 11 items informed by prior literature (i.e., Crane et al., 2015; Foote, 2023; Verrinder & Phillips, 2014). These items included degree name and level, years of study completed, current year level, and the number, weeks and types of placements completed (with types of placements drawn from typical placements in Australian veterinary programs and presented for each degree level). Three dichotomised items (answered 'yes/no') enquired about prior experience living on a farm, and prior and current experience working in a veterinary practice.

Moral Distress

Moral distress was measured using the 16-item Moral Distress for Veterinarians Scale (MDS-V; Montoya, 2022). Each item in the MDS-V, such as "performing euthanasia for reasons I do not agree with", was responded to twice; first, to assess the frequency that participants experienced each item (0 = 'Not applicable' to 4 = 'Very frequently'), and second, to assess the level of distress caused by each item (0 = 'Not applicable' to 4 = 'Very distressing'). The frequency and distress scores were multiplied for each item to create a single score. A final moral distress score, ranging from 0-256, was obtained by summing the 16 item scores.

The MDS-V is an unpublished scale from a doctoral dissertation, validated in one cohort (Montoya, 2022). Despite being unpublished, the MDS-V was selected as no psychometrically validated scales for moral distress in veterinarians exist in the published literature. While the MDS-V author suggests calculating the MDS-V as a total score, internal reliability was typically reported in terms of subscales, demonstrating high internal consistency (α ranging between .77 - .85; Montoya, 2022). The internal consistency for the MDS-V within the current study was high (α = .84).

Participants indicated the most distressing placements by selecting one or more placements from a list of 15 categories (and 'other', if the most distressing placement type was not listed) drawn from typical placements in Australian veterinary programs. Most distressing placement type was then dichotomised into completion or non-completion of a companion animal placement.

Perfectionism

Perfectionism was measured using the Frost Multidimensional Perfectionism Scale (FMPS; Frost, 1990). The FMPS contains 35 items in four subscales; 'Concerns over mistakes and doubts about actions' (FMPS-S1), 'Excessively high personal standards' (FMPS-S2), 'Concern with precision, order and organisation' (FMPS-S3), and (FMPS-S4) 'Excessive concern with parental expectation and evaluation (Stöber, 1998). This measure has been widely validated for use, including with student populations (Hawkins et al., 2006; Kornblum & Ainley, 2005; Stöber, 1998). The present study used FMPS-S1 (13 items), FMPS-S2 (7 items), and FMPS-S3 (6 items) to measure perfectionism. FMPS-S4 was excluded due to the lack of relevance to moral distress in past research. Participants indicated, using a 5-point Likert scale (1 = 'Strongly disagree', 5 = 'Strongly agree'), how often each of the 26 items applied to them. FMPS-S1, FMPS-S2 and FMPS-S3 total scores range from 13-65, 7-35, and 6-30, respectively. The three subscales have high internal consistency (α = .78

to α = .88; Stöber, 1998), demonstrated in the current study: FMPS-S1 (α = .89), FMPS-S2 (α = .84) and FMPS-S3 (α = .86).

Emotional Wellbeing/Psychological Distress

Wellbeing was measured using the 5 item Mental Health Inventory 5 scale (MHI-5; Berwick et al., 1991). Using a 6-point Likert scale for each item (0 = 'All of the time', 6 = 'None of the time'), participants indicated their emotional wellbeing during the past month. Items 1 and 2 were reversed scored. Total scores, ranging from 0 to 30, were used to provide a categorical description of participants' psychological distress; the total score was reversed, and the recommended cut off score of 17 and over was then applied to classify a participant as having a high psychological distress and low wellbeing (Department of Health and Aged Care, 2021). The MHI-5 has excellent internal consistency (α = .82; Milner et al., 2017), demonstrated in the current study (α = .82).

Industry Attrition

Industry attrition was measured through two closed response items ('yes' = intention to remain in the veterinary industry, 'no' = likelihood of attrition). The items asked about intention to continue veterinary studies and intention to commence a veterinary career. An open-response question also explored the impact of ethical dilemmas on intention to stay in the industry.

Procedure

Ethics approval was granted by the University of Adelaide's Human Research Ethics Committee (approval number 22/23). Data was collected via a 15-minute online survey (Appendix A) circulated from April to July 2023. Participation was voluntary, and participants were provided with study information and consent questions as a survey preamble (Appendix B). Participants could withdraw from the study at any time before survey submission and were directed to an exit page if they did not consent.

Recruitment occurred via purposive and passive snowball sampling through flyers displayed on campus (Appendix C), social media posts to relevant university webpages (Appendix D), and emails to relevant university groups and academic staff associated with veterinary courses across Australia (Appendix E). Interested parties could contact the researcher for further information or access the survey via the survey link or QR code.

Power Analysis

There is no consistent rule for calculating an adequate sample size for multiple linear regression, thus several approaches to power analysis were considered (Riley et al., 2020). While preferable to calculate sample size a priori, it was deemed inappropriate to set a pre-defined effect size due to the very limited research in this field to inform this decision. Therefore, a formal post hoc power analysis was calculated using G*Power 3.1 (Faul et al., 2009). Based on the observed effect size of .44, an alpha of .05, and the sample of 124 used in the regression, a power of .9 was reached, indicating the study was sufficiently powered.

Data Analysis

Quantitative data were analysed using SPSS Statistics, Version 29. Descriptive statistics and frequencies were calculated for participants' demographic characteristics, veterinary experience variables, moral distress, wellbeing, and perfectionism. A multiple linear regression analysis was conducted to explore the relative importance of 11 predictors in explaining moral distress. Adjusted R^2 values were reported. Variables were entered using the enter method.

Qualitatively data was examined via open-text responses to the item, "What impact, if any, does seeing animals treated in a way that contradicts your ethical/moral values have on your intention to stay in the industry?" to gain insight into the relationship between moral conflicts and industry attrition. Qualitative data was manually analysed using inductive conventional content analysis (Hsieh & Shannon, 2005). Participant responses were reviewed

multiple times before generating initial codes; codes were then reviewed and grouped based on similar content to create categories and subcategories. The unit of analysis was the frequency of participants whose response fit within each category/subcategory. The research supervisor appraised and verified the codes, categories, and subcategories.

Multiple Linear Regression Analysis: Moral Distress

Participants' moral distress was examined via one dependent variable: the total MDS-V score. Bivariate correlation analyses were conducted between moral distress and wellbeing, perfectionism, and quantitative measures of industry attrition. A post-hoc bivariate correlation between moral distress and the dichotomised 'most distressing placement' variable was conducted.

Factors Associated with Moral Distress

Variable Selection. Eleven variables were selected a priori based on limited existing literature concerning moral distress in practising veterinarians and healthcare professionals, and variables that prima facie may be associated with moral distress (Batchelor & McKeegan, 2012; Crane et al., 2015; Kogan & Rishniw, 2023).

Demographic Characteristics. Two variables were examined: age (continuous) and gender (categorical).

Veterinary Experience. Four variables were explored: the length of industry experience (i.e., weeks of placement, a continuous variable), and three dichotomised variables – experience of past/current employment in a veterinary practice, farm experience, and completion of a companion animal placement.

Perfectionism. Three continuous variables were investigated: the total scores of the three FMPS Subscales.

Industry Attrition. Two dichotomised variables were examined: intention to continue veterinary studies and intention to commence a veterinary career.

Testing Assumptions for Multiple Linear Regression. Normality, linearity, and homoscedasticity were assessed numerically and visually (via histograms, p-plots, and scatter plots of the regression residuals; Mishra et al., 2019); these assumptions were satisfied. Multicollinearity was absent, with variance inflation factors (VIF) for all independent variables being less than 2; typically, a VIF between 5-10 is considered problematic (Akinwande et al., 2015).

Results

Veterinary Experience

Table 2 reports descriptive data concerning veterinary study and placement experience. On average, participants had completed 3.5 years of study (*SD* = 1.6) and 13.5 weeks of placement (*SD* = 8.7). 31.6% of participants had lived on a farm before or during their studies. Of those employed, 61.8% were currently working in a veterinary practice, and 64.3% had worked in a veterinary practice at some point.

Table 2

Descriptive Statistics for Veterinary Degree Progression (N =158)

	n	*M*	*SD*	Range	
				Min	Max
Years of study completed	154	3.5	1.6	0	8
Weeks of placement completed	135	13.5	8.7	1	55
Number of placements completed	148	9.1	4.3	1	20

Participants experienced diverse placements. The most frequently completed placements were similar between degree levels, with equine, companion animals, and cattle being the most common placement areas (Table 3).

Table 3

Types of Placements Undertaken in Each Degree Type (N = 158)

	Undergraduate (*n* = 158)		Postgraduate (*n* = 83)	
Types of placements completed	*n*	*%*	*n*	*%*
Equine	125	79.1	49	59.0
Companion animals	108	68.4	60	72.3
Laboratory animals	31	19.6	2	2.4
Aquatic species	28	17.7	11	13.3
Camels	6	3.8	1	1.2
Production animals: Cattle (Dairy)	97	61.4	29	34.9
Production animals: Cattle (Meat)	95	60.1	31	37.4
Production animals: Sheep (Wool)	86	54.4	28	33.7
Production animals: Sheep (Meat)	70	44.3	23	27.7
Production animals: Alpacas (Wool)	35	22.2	3	3.6
Production animals: Alpacas (Meat)	8	5.1	2	2.4
Production animals: Goat (Dairy)	16	10.1	5	6.0
Production animals: Goat (Meat)	11	7.0	2	2.4
Intensive - Chickens	57	36.1	13	15.7
Intensive - Pigs	49	31.0	8	9.6
Intensive - Fish	28	17.7	7	8.4
Wildlife - Native	66	41.8	23	27.7
Wildlife - Zoo	34	21.5	17	20.5
Wildlife - Other	3	1.9	2	2.4
Other[a]	9	5.7	10	12.1

Note. Percentage values may be greater or less than 100% due to participant selection of more than one item.

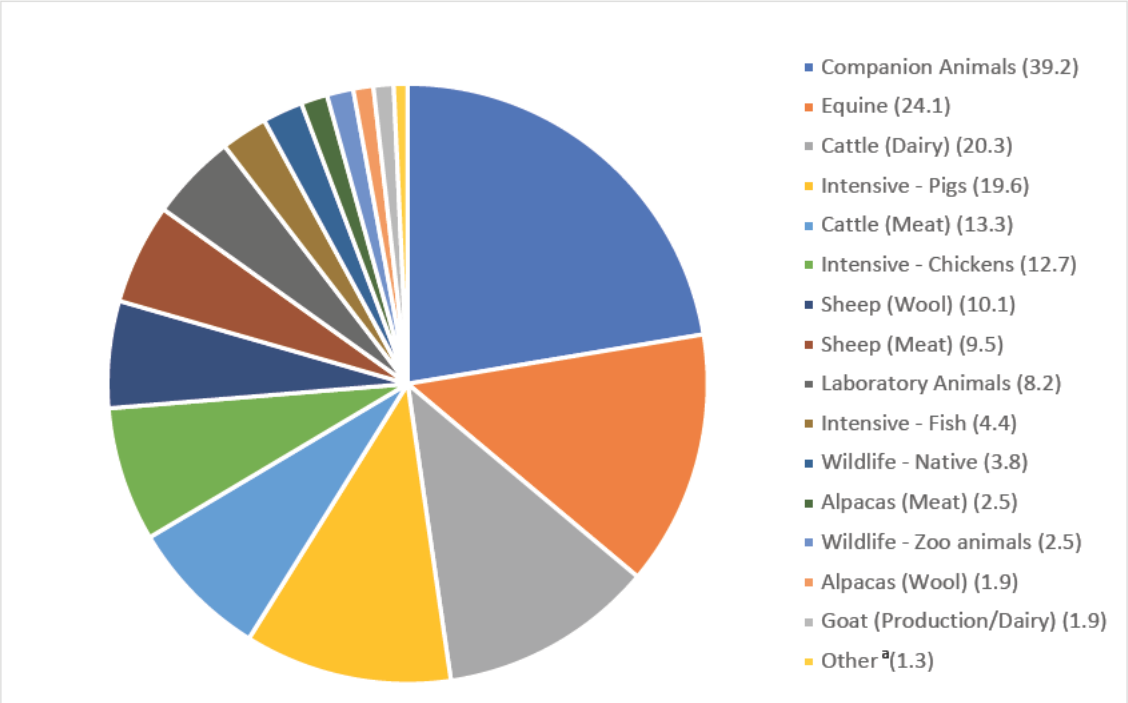
[a] Other responses reported include include “Clinical placements”, “Flexi placement farming course”, “Greyhounds”, “Hobby farms”, “Production animal ‘repro’”, “Intramural rotations – Small animal emergency/anaesthesia/ECC”, “Mixed”, “None during undergraduate study” and “None during postgraduate study”.

Moral Distress

Participants moral distress scores ranged between 0-190 ($M = 69.3$, $SD = 37.3$), with the mean score below the midpoint of the MDS-V. Figure 1 displays the percentage of participants who endorsed each placement type as the most distressing. Companion animal placements were the most distressing (39.2%). A post-hoc bivariate correlation demonstrated a small association between completing a companion animal placement and higher moral distress, $r(156) = .19$, $p < .05$.

Figure 1

Summary of Most Distressing Placement Types



Note. Values in Figure 2 are representations of percentages of the sample that endorsed each placement type ($N = 158$). Percentage values may not equal to 100 as participants were given the option to choose more than one response option.

[a] Other responses reported include "ECC- emergency" and "Hobby farms".

Factors Associated with Higher Moral Distress

Eleven independent variables were entered into a multiple linear regression analysis to examine the factors associated with higher moral distress (Table 4). The total variance explained by the model was 23.9%, $R^2 = .24$, $F(11) = 4.52$, $p < .001$. Participants with employment experience at a veterinary practice and those who had completed more weeks of placement (greater experience) reported significantly higher moral distress (Table 4). FMPS-S1 was associated with higher moral distress, $r(156) = .17$, $p < .05$; however, perfectionism was not a predictive factor. Participants reported elevated perfectionism on all subscales (see Appendix F).

Wellbeing

Descriptive and bivariate correlate analyses excluded two participants for incomplete responses to the MHI-5 ($n = 156$). Wellbeing scores ranged between 6-28 ($M = 16.7$, $SD = 4.6$); higher scores indicated higher wellbeing. Higher moral distress was associated with poor wellbeing, $r(154) = -.24$, $p < .001$. When dichotomised as per the recommended MHI-5 cut-off point, 25% of participants had poor wellbeing.

Industry Attrition

Most participants (95.6%) intended to continue veterinary studies and to commence a veterinary career upon study completion (96.2%). When measured quantitatively, industry attrition was not a significant predictor of moral distress in the regression analysis, nor was there a significant correlation between industry attrition and moral distress. Qualitative responses supported these results but highlighted a diverse range of impacts on industry attrition from experiencing ethical and moral dilemmas (Table 5).

Table 4

Multiple Linear Regression for Moral Distress (n = 124)

Variable	*B*	***β***	*SE*	95% CI		*t*	*p*
				LL	*UL*		
Constant	27.31	-	45.39	-62.62	117.24	0.60	.549
Age	0.06	.01	0.78	-1.49	1.61	0.08	.940
Gender	9.69	.09	8.74	-7.64	27.01	1.11	.270
FMPS Subscale 1	0.42	.10	0.36	0.79	2.39	1.18	.240
FMPS Subscale 2	0.83	.10	0.75	-40.79	-15.27	1.11	.268
FMPS Subscale 3	0.43	.04	0.88	-23.05	4.33	0.49	.627
Weeks of placement	1.59	.36	0.40	-32.81	20.38	3.92	<.001*
Past/current employment in veterinary practice	-28.03	-.36	6.44	-17.10	28.58	-4.35	<.001*
Farm experience	-9.36	-.11	6.91	-4.77	24.54	-1.36	.178
Intention to continue veterinary studies	-6.21	-.04	13.42	-0.29	1.13	-0.46	.644
Intention to commence veterinary career	5.74	.04	11.53	-0.65	2.31	0.50	.619
Completed companion placement	9.89	.12	7.40	-1.31	2.17	1.34	.184

Note. * $p < .001$. CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

Content Analysis of Participants' Comments Concerning the Impact of Ethical/Moral Dilemmas on Industry Attrition

One hundred and fifty-eight comments (including 24 non–responses) about the impacts of ethical and moral dilemmas on industry attrition were coded into 23 categories and 12 subcategories (Table 5). Among those who responded, 'Motivator to improve the industry' (36.08%) and 'Minor to no impact' (14.56%) were most frequently present. Comments within the category 'Motivator to improve the industry' mentioned that ethical dilemmas drove participants to remain in the industry to make a positive change, highlighting a passion for animal welfare. The category 'Minor to no impact' displayed that intention to remain in the industry was not largely impacted by ethical dilemmas; participants communicated they had "*chosen this path*" (Participant 26) and it was their "*goal for a long time*" (Participant 17) despite any negative experiences they felt, which again emphasised participants' passion for pursuing animal welfare and was consistent with quantitative results.

Table 5

Participants' Comments Concerning the Impact of Ethical/Moral Dilemmas on Industry Attrition (N=158)

Category	Description	Frequency[a]	Example Comments
Motivator to improve the industry	Ethical/moral dilemmas promote a sense of personal responsibility and motivation to become a better vet and make positive contributions to the industry	57 (36.08%)	*"Seeing animals in a way that contradicts my ethical/moral values gives me motivation to graduate and become a veterinarian that will give my patients the care that they deserve."* (Participant 11) *"It makes me want to be more successful so I can make a positive impact in the industry and change the lives of animals. I got into the industry to make a difference to the welfare and rights of animals and that is what I am going to do. No matter the toll it takes on me."* (Participant 124)
No response	Participants did not provide a comment	24 (15.19%)	-
Minor to no impact	Ethical/moral dilemmas cause no impact or very little impact	23 (14.56%)	*"It doesn't have a huge impact on my intentions - I will most likely stay in the industry regardless and I can only do my best to advocate for the animal."* (Participant 116). *"No impact, I've chosen this path and I'm not veering."* (Participant 26).

Individual responsibility	Ethical/moral dilemmas serve as a reminder that you can only control your personal behaviour and moral code, not others	17 (10.76%)	*"I'll still enter the industry but try as best I can to stick to my moral code as a veterinarian and stand my ground against situations that don't sit right with me."* (Participant 126). *"It doesn't have too much of an impact because I know that every client/person is different in how they view/treat their animals. Some client's views may be the opposite of mine but the best thing I can do is offer another opinion and hope that it resonates with them in some way."* (Participant 90).
Distressed/concerned about animals	Feelings of distress, upset, and worry evoked by how animals are treated during ethical/moral dilemmas	16 (10.13%)	*"...Lab mice were treated horribly. Kittens were euthanised and the vet said oh you will get use to it then laugh it off. Its heartbroken."* (Participant 122). *"...I ended up standing with the dog for 4 hours in the surgery room as it was intubated and struggling to breathe, passing in and out of consciousness, until it eventually passed away in my arms. It was the most heartbreaking things to witness..."* (Participant 136).
Hopeless and disheartened - In general - Animal mistreatment	Feelings of helplessness, hopelessness and defeat evoked by a range of factors involved in ethical/moral dilemmas	**14 (8.86%)** 7 (4.43%) 3 (1.90%)	*"...the pressure/complete misunderstanding from people outside of the industry and the views they hold towards it- VERY DISHEARTENING."* (Participant 38). *"I find it stressful and I feel powerless to change it."* (Participant 103).

- Client constraints		2 (1.27%)	
- External pressure		1 (0.63%)	
- Lack of support		1 (0.63%)	
Selective about area of practice	Will choose the area of the industry to work in very carefully based on experience with ethical/moral dilemmas	12 (7.59%)	*"Outlines to me areas that I may not want to work in, or areas that I'd like to make a change in."* (Participant 88). *"I will stay in the industry I will just consider moving to another part of the industry (from small animals to large animals or vice versa) and try to work out where I am suited…"* (Participant 5).
Area specific challenges	Particular areas of the industry presented unique ethical/moral challenges and impacts	**11 (6.96%)**	*"The type of mistreatment of animals that I have seen so far was the worst I have ever seen at one pig placement, and every other time, the animals have never been mistreated on purpose..."* (Participant 96).
- Production animals		6 (3.80%)	
- Companion animals		2 (1.27%)	*"It is difficult to reconcile poor treatment of animals or having their worth equated to a dollar value. For example, when euthanasia is performed on performance animals (e.g. racing Greyhounds) due to injury or reduce ability to perform, this become quite distressing and requires a concerted effort to remind healthily detached…"* (Participant 134).
- Performance animals		2 (1.27%)	
- Laboratory animals		1 (0.63%)	

Unsure about leaving - It depends on frequency and personal experience of facing moral dilemmas - Overall - It depends on being supported	Feeling unsure about future intentions regarding industry attrition	**10 (6.33%)** 4 (2.53%) 4 (2.53%) 2 (1.27%)	*"It makes me question whether I want to be complicit in the treatment, or makes me think that I could better use myself elsewhere, where the treatment is better…"* (Participant 35). *"I think I am at a naïve stage in my career, so currently it affects me only a little, but I believe I may have a hard time allowing these treatments occur without attempting to find alternative solutions. If this repeats with a negative outcome, that may certainly affect my future career choices."* (Participant 121).
Personal doubt and insecurity	Ethical/moral dilemmas have made participants question their personal values and suitability for the profession	9 (5.70%)	*"It makes me question how I would survive and thrive in the industry if I cannot maintain my own morals. I feel as though I won't be happy/fulfilled if I feel like I've compromised myself- which I assume is what has happened in some cases that I've seen on placement with the head veterinarian."* (Participant 13). *"…It honestly makes me question if I am strong enough for this industry, especially considering if I have the emotional capacity to put my emotions aside and make decisions for the great of good, with the best outcomes…"* (Participant 22).

Workplace selectivity	Will change workplaces to cope with ethical/moral dilemmas rather than change industries	7 (4.43%)	*"None. If I am unhappy with the way animals are treated at a particular organisation, I will simply move to another organisation, rather than leave the industry."* (Participant 32). *"Treatment of animals that contradicts my ethics has a definite impact on me. I would like to believe that if I was in a workplace where this was frequent and was affecting me that I would find a workplace more suited…"* (Participant 49).
Increased distrust and cynicism towards the industry	Feeling more cynical/distrusting/upset at fellow professionals and the industry itself	6 (3.80%)	*"… It makes it hard to trust older professionals that have become used to and no longer sensitive to other issues."* (Participant 53). *"… just makes me question why it is so much strain to be able to do a job that is not as rewarding as it should be at times."* (Participant 17).
Torn between leaving and staying	Feeling torn between staying and leaving the industry because of ethical/moral dilemmas	6 (3.80%)	*"On one hand makes me want to leave the industry but also stay to try and be the difference."* (Participant 81). *"Double edged sword - wants me to leave but also stay and work to make it better."* (Participant 23).

Complete industry attrition	Ethical/moral dilemmas lead participants to consider leaving the industry/degree altogether	5 (3.16%)	*"Makes me want to leave."* (Participant 50). *"It makes me disheartened and makes me want to leave the industry. I feel like so many people as well as me want to try to make a difference and seeing other treat animals in a way that is ethically/morally contradictory makes it feel like there's no point in trying to make a difference."* (Participant 145).
Optimism and belief in good intentions	Industry attrition is prevented by hope for a better future and belief in the potential of the industry	5 (3.16%)	*"I think the vast majority of people in this industry have animal welfare top of mind in everything they do, and the way they treat animals aligns with this. Even in industries where animal welfare is inherently questionable due to the nature of intensive production, veterinarians are there to make the best of a not great situation, and are working very hard to try and make it the best it can be, within the confines of having to provide for a growing population at a price point that is affordable and provides profit to producers. I haven't really seen many incidents of animals being treated in a way that contradicts my ethical/moral values within the industry, with the exception of the occasional client making not great choices - but most of the time clients are doing that because they have been mislead on what constitutes effective and*

			appropriate training techniques, or animal handling techniques…" (Participant 85).
Hard to stay	Ethical/moral dilemmas increase difficulty in working/studying in the industry and maintaining optimism	5 (3.16%)	*"It makes it really hard to remain positive and remember the bigger picture of why I chose to enter this industry. It can make it really hard to stay, not so much because these things happen occasionally, but because it happens consistently and it feels as if no changes are made to rectify the problem."* (Participant 138). *"very much so. even though i havent completed many placements i feel that seeing animals not being treated in a way that is best practice is very disheartening and it makes it really difficult to complete any placements."* (Participant 40).
Compassion fatigue and burnout	Managing ethical/moral dilemmas evokes feelings of burnout, exhaustion, and compassion fatigue	4 (2.53%)	*"Seeing animals being treated in a way that I do not agree with makes me feel disheartened and usually contributes to my compassion fatigue. I currently have not had any strong feelings of leaving the industry but if I did, it would be due to compassion fatigue."* (Participant 148). *"It's draining and sometimes it feels like there's nothing you can do and it makes you think if your actually helping."* (Participant 106).

Frustration	Ethical/moral dilemmas evoke feelings of frustration and anger	3 (1.90%)	*"I have not seen many cases as I do not work in the industry yet. however whenever I witness such occasions during placements, I hate people/owner of the pets/ veterinarians even more…"* (Participant 112). *"I think it is very frustrating when you cannot treat animals how you would like to, but most of it is up to the client so it's not your fault…"* (Participant 18).
General large impact	Ethical/moral dilemmas cause large impacts	3 (1.90%)	*"A large impact."* (Participant 15).
Off topic	Responses were off topic	3 (1.90%)	*"NA"* (Participant 74).
Reality check	Facing ethical/moral dilemmas felt like a reality check of the real industry	2 (1.27%)	*"It was a wake up call to see what really happens that's not 'gold standard' and isn't taught in university."* (Participant 28). *"It definitely feels like childhood idealism of helping animals and their people become deflated with each instance…"* (Participant 9).
Prior property/farm experience	Farm/property experience improves capability of managing ethical/moral dilemmas	1 (0.63%)	*"I am from a property and have seen a lot of things happen to production animals. I know that I want to work with production animals when I graduate and I know that I will be less affected seeing the way these animals are treated than*

			someone from Melbourne for example who has no experience." (Participant 5).
Perfectionism	Perfectionistic traits make coping with the ethical/moral challenges more difficult	1 (0.63%)	*"…Unfortunately many people whom would identify as perfectionistic, find themselves in veterinary science, entering themselves into a very flawed system. This naturally causes strain. The entry into veterinary science is so competitive that we [students] are taught to become perfectionistic in order to succeed into the entry of this popular program. You'll find that being perfectionistic in a flawed system where there are so many uncontrollable, leads to many people leaving this profession, and some devastatingly taking their own lives; approximately one person every 12 weeks."* (Participant 22).

Note. N = number of participants. Comments are reported verbatim including spelling and grammatical errors. Percentage values may add to greater than 100% as participant comments were separated and allocated to multiple categories.

[a] Data presented as *n* (%)**.**

Discussion

Overview

The literature, albeit limited, has demonstrated relationships between moral distress and indicators of low wellbeing and job dissatisfaction in practising veterinarians, alongside possible relations to attrition among healthcare professionals (Ando & Kawano, 2018; Ashall, 2023; Kogan & Rishniw, 2023). Modifying factors for moral distress detailed in the literature include gender, age, industry experience, and perfectionism (Batchelor & McKeegan, 2012; Crane et al., 2015; Kogan & Rishniw, 2023). Despite the factors linked to increased moral distress, such as younger age, limited industry experience, and moral competency (Batchelor & McKeegan, 2012; Crane et al., 2015), moral distress among veterinary students has only been explored in one study (Verrinder & Phillips, 2014).Therefore, the present study aimed to examine moral distress and its associations with wellbeing and attrition among veterinary students in Australia.

Present Study's Findings

Levels of Moral Distress

Moral distress levels reported were low, falling below the midpoint of the MDS-V. These results were consistent with Foote's (2023) study, which reported low moral distress in various healthcare professionals, including veterinarians. Ashall (2023) conceptualises moral conflicts as precursors for moral *stress* rather than *distress*, describing the experience as an everyday, low-level stressor for veterinarians. Low moral distress within the present study may be explained by moral conflicts during university placements being considered as day-to-day low-level stressors. Additionally, Wells et al. (2021) identified emotional intelligence as a predictor for managing moral conflicts before they evolve into moral distress (through client communication, decision-making, and stress tolerance). Emotional intelligence may

explain or mediate the lower moral distress reported in the present study and should be explored in future research.

Factors Associated with Moral Distress

Significant predictors for moral distress included completing more weeks of placement and having veterinary employment experience, suggesting greater experience in the industry is associated with greater moral distress. The present study's findings contradict Crane et al. (2015) who reported a decrease in moral distress as industry experience increases, reinforced by Foote (2023), who reported an association between moral distress and less years of working experience. However, the present study's findings are consistent with research from Ashall (2023) detailing the cumulative nature of moral stress over time. The researcher postulates that the relationship observed in the present study may relate to increased exposure to moral conflicts (i.e.performing euthanasia and managing clients' financial difficulties) as veterinary experience increased (Batchelor & McKeegan, 2012; Montoya et al., 2019).

Increased exposure may also explain why companion animal placements were reported as the most distressing placement type; these types of moral conflicts frequently occur in companion animal clinics where burnout is often high (Kondrup et al., 2016; Steffey et al., 2023). Volk (2022) reported that veterinarians working with production animals and equines reported less psychological distress than companion animal veterinarians. Contrary to existing literature, age and gender were not significant predictors for moral distress (Crane et al., 2015; Kogan & Rishniw, 2023). These results are likely due to the lack of age and gender variation within the present study (most participants were females aged between 21-26), creating difficulty in detecting statistical differences. Gender and age were significant in previous studies where fewer modifying factors were considered; gender and age were analysed in the present study within the context of several other unresearched variables.

Thus, their statistical influences may have been too low for detection. Further research and replication are needed to corroborate the present study's findings.

A small correlation was observed between moral distress and the FMPS-1. While perfectionism did not predict moral distress, it may still mediate moral distress and wellbeing, as Crane et al. (2015) observed in practising veterinarians. Associations between perfectionism and wellbeing were not examined within the scope of this study, but as elevated perfectionism was observed, future research should consider these factors closely.

Wellbeing and Moral Distress

On average, wellbeing was moderate to slightly high, contradicting most findings, which report significantly lower wellbeing among veterinary students and practising veterinarians (Lewis & Cardwell, 2018; Nahar et al., 2019; Yang et al., 2019). The results are consistent with Dilly et al. (2016), who reported that 56% of veterinary students ($N = 142$) avoided excessive stress during placement. The contradictory findings may be influenced by the prevalence of self-stigma among veterinary students, which increases the likelihood of downplaying their distress and avoiding disclosure of mental health challenges (Cardwell et al., 2013; Lokhee & Hogg, 2021). In view of the elevated perfectionism observed in this sample, perceived flaws or imperfections related to wellbeing were likely under-reported (Holden, 2020).

High moral distress was associated with low wellbeing. This relationship aligns with prior research identifying associations between moral distress and indicators of poor wellbeing, including compassion fatigue and burnout (Kogan & Rishniw, 2023; Moses et al., 2018). Research demonstrates that low wellbeing and mental-ill health in veterinary students impacts negatively on course outcomes and quality of services provided, hence it is important to recognise the 25% of students experiencing psychological distress in the present study (Hafen Jr et al., 2008).

Moral Distress and Intention to Remain in the Veterinary Industry

No statistical relationship was found between moral distress and intention to leave the veterinary industry, consistent with findings in practising veterinarians (Montoya, 2022). Instead, moral conflicts motivated 36% of participants to remain in and improve the industry, a finding supported by Verrinder and Phillips (2014) who noted that moral distress appeared to motivate students to remain in the industry to resolve animal ethics issues. Over 95% of participants intended to continue into veterinary professions, aligning with national workforce trends demonstrating an increase in the number of students who entered veterinary employment between 2019 and 2022 (Social Research Centre, 2022). However, survivorship bias may influence these findings; those with the intention to leave the degree due to moral distress may have done so already, therefore missing the opportunity to participate in the present study (Eldridge, 2023).

Methodological Considerations

Strengths

This study is the first to provide vital insight into the experiences of moral distress, wellbeing, and attrition within Australian veterinary students. The self-report nature of the study allowed for authentic findings to be established. Moreover, using a mixed methods approach provided the benefits of generalisable, valid quantitative results, and deeper, unique perspectives from a novel population through qualitative reporting (Creamer & Reeping, 2020). This is particularly beneficial considering the study's exploratory nature; the open response items provided an opportunity to discover new factors (i.e., motivation) relating to attrition from the industry during veterinary training in the context of moral distress.

Furthermore, the diverse sample is a strength of this study. Greater generalisability was achieved due to the varied representation of demographic factors within this sample; participants were of diverse ethnicity, country of birth, degree level, and varied in residence

across both urban and rural Australia. The representation of rural veterinary students at various stages in their training is critically important to Australia's current attrition and wellbeing crises, as the veterinary workforce shortage is reaching crisis point within rural and regional areas (AVA, 2023). Thus, providing a voice to rural and regional students, and those in urban locations who may be considering regional practice, might improve efforts to support a critical population of future professionals. The diversity of this sample echoes Australia's multicultural university culture; national data reports that 25% of veterinary trainees were international students (Department of Education, 2021). One domain lacking diversity within this sample was gender; participants were predominately female (88.6%). However, this is reflective of the female-dominated veterinary workforce in Australia; 67.3% of practising veterinarians in a national survey (N = 3749) were female (AVA, 2021).

Limitations

The present study utilised a cross-sectional design to establish preliminary findings; this design may limit potential inferences about directionality or causality (Wang & Cheng, 2020). Further research is necessary to support the present study's findings; in particular, longitudinal research is recommended to measure moral distress and wellbeing as veterinary students progress through their careers. Another potential limitation of the study was using the MDS-V, as it has previously only been used within one other sample of veterinarians (Montoya, 2022). The reliability of this measure is therefore limited; however, internal consistency was high within both the original pilot study and the present study. The researcher conducting the present study deliberated the benefits and risks of using the MDS-V, rather than modifying a version of the MMD-HP for healthcare professionals, and ultimately decided the MDS-V better captured the construct of moral distress in a veterinary context.

Moral distress reported in the present study was not overly high; however, self-selection bias may have impacted findings. The aim of exploring moral distress was made transparent on all participant recruitment materials to satisfy ethical requirements. Both veterinary students and practising veterinarians report high self-stigma around mental ill-health and stress (Lokhee & Hogg, 2021; Connolly et al., 2022). The present study may be prone to self-selection bias if students with higher moral distress found the emotionally challenging nature of the topic too confronting, choosing not to participate, culminating in a disproportionally skewed sample towards lower moral distress levels (Elston, 2021). Most non-completing participants dropped out at the MDS-V; this could also suggest the occurrence of self-selection bias. Interestingly, Montoya (2022) observed a similar trend while developing the MDS-V, noting that 30% of participants (N = 920) did not respond to moral distress survey questions; it was proposed that non-completion could be due to technical difficulties, the survey length, or that moral distress items may have been perceived as intrusive. To reduce the likelihood of self-selection bias while researching moral distress, future studies could consider conducting interviews to establish rapport and provide greater support to participants who may struggle with the topic of moral distress (Melville & Hincks, 2016).

Future Directions

The results of the present study provide preliminary insights into the experience of veterinary students in Australia. Despite 25% of participants meeting the criteria for psychological distress and the relationship between low wellbeing and moral distress, most participants aimed to continue a veterinary career and communicated their motivation and passion for animal welfare. Future research could explore whether protective factors such as optimism and emotional intelligence explain why veterinary students maintain these intentions despite the toll on their wellbeing from experiencing moral distress, aligning with

McArthur, Mansfield et al.'s (2017) recommendations for a greater research focus on adaptive, positive factors for veterinary student wellbeing. Wallace (2019) proposed that occupational activities, including helping others and engaging in meaningful work, positively influences veterinarian wellbeing; thus, moderation analyses are recommended to investigate whether motivation to help animals moderates moral distress and wellbeing/attrition.

While outside of the scope of the present study, further analyses are recommended to establish the most frequent and distressing types of moral conflicts experienced by veterinary students, as well as investigation of associations between the elevated perfectionism observed in this study and wellbeing, given findings of the mediating effect of perfectionism for moral distress observed in practising veterinarians (Crane et al., 2015). It would be worth exploring alternative measures of wellbeing, such as compassion fatigue and burnout to provide a comparative basis against existing literature (Chigerwe et al., 2014; McArthur, Andrews et al., 2017). Though cross-sectional research in the aforementioned areas will be informative, the predictive influence of greater veterinary experience on moral distress suggests longitudinal research would be best to corroborate and expand the present study's findings to improve understanding of the Australian veterinary industry's mental health and attrition crisis.

Implications and Conclusions

To the researcher's knowledge, the present study is the first to examine moral distress and perfectionism within the Australian veterinary student population and the first to explore associations with wellbeing and attrition. The findings add to the sparse literature for this population and provide critical insight into the factors associated with moral distress, highlighting the need to support the wellbeing of early career veterinarians as they gain more experience and exposure to moral conflicts. Educational institutes should recognise the distress noted during companion animal placements and use the findings of the present study

to inform moral distress, mental health and self-help training within the curriculum in preparation for these placements. This is consistent with AVA and Superfriend's (2021) national strategies, endorsing the benefits of improving self-awareness and self-help training, and advocating for mental health and wellbeing psychoeducation within veterinary degrees.

The commitment and passion of these future veterinarians is clear. The researcher hopes that the present study's findings can prompt growth in the evidence base for educational and occupational policymakers in the veterinary industry, with the ultimate goal of improving the veterinary workforce shortage in Australia.

References

Ando, M., & Kawano, M. (2018). Relationships among moral distress, sense of coherence, and job satisfaction. *Nursing Ethics, 25*(5), 571-579.

Akinwande, M. O., Dikko, H. G., & Samson, A. (2015). Variance inflation factor: As a condition for the inclusion of suppressor variable(s) in regression analysis. *Open Journal of Statistics*, *5*(7), 754-767.

Ashall, V. (2023). Reducing Moral Stress in Veterinary Teams? Evaluating the Use of Ethical Discussion Groups in Charity Veterinary Hospitals. *Animals, 13*(10), 1662.

Australian Bureau of Statistics. (2018). *Australian Statistical Geography Standard (ASGS): Volume 5 – Remoteness Structure, July 2016*. (No. 1270.0.55.005). Australian Bureau of Statistics. https://www.abs.gov.au/ausstats/subscriber.nsf/log?openagent&1270055005_cg_postcode_2017_ra_2016.zip&1270.0.55.005&Data%20Cubes&14E68CB22C937EBCCA258251000C8C1B&0&July%202016&16.03.2018&Latest.

Batchelor, C., & McKeegan, D. (2012). Survey of the frequency and perceived stressfulness of ethical dilemmas encountered in UK veterinary practice. *Veterinary Record, 170*(1), 19.

Berwick, D. M., Murphy, J. M., Goldman, P. A., Ware, J. E., Barsky, A. J., & Weinstein, M. C. (1991). Performance of a Five-Item Mental Health Screening Test. *Medical Care, 29*(2), 169-176.

Betzler, M. (2001). Ethical Dilemmas: Research and Treatment Priorities. In N. Smelser & P. Baltes (Ed). *International Encyclopedia of the Social & Behavioural Sciences*. Pergamon. https://www.sciencedirect.com/science/article/pii/B0080430767001625

Cardwell, J. M., Smith, K. C., Baillie, S., & Adams, V. J. (2013). A cross-sectional study of mental health in UK veterinary undergraduates. *Veterinary Record, 173*(11), 266-266.

Connolly, C. E., Norris, K., Dawkins, S., & Martin, A. (2022). Barriers to mental health help-seeking in veterinary professionals working in Australia and New Zealand: A preliminary cross-sectional analyses. *Frontiers in Veterinary Science, 9,* 1-11.

Corley, M. C. (2002). Nurse Moral Distress: A Proposed Theory and Research Agenda. *Nursing Ethics, 9*(6), 636-650.

Chigerwe, M., Boudreaux, K. A., & Ilkiw, J. E. (2014). Assessment of burnout in veterinary students using the Maslach Burnout Inventory-Educational Survey: a survey during two semesters. *BMC Medical Education, 14*, 255.

Crane, M. F., Phillips, J. K., & Karin, E. (2015). Trait perfectionism strengthens the negative effects of moral stressors occurring in veterinary practice. *Australian Veterinary Journal, 93*(10), 354-360.

Crane, M. F, Bayl-Smith, P., & Cartmill, J. (2013). A Recommendation for Expanding the Definition of Moral Distress Experienced in the Workplace. *The Australasian Journal of Organisational Psychology, 6*, e1.

Creamer, E. G., & Reeping, D. (2020). Advancing mixed methods in psychological research. *Methods in Psychology, 3*, 100035.

Department of Education. (2021). *Higher Education Statistics Collection – 2021 Student Data: Full Year Data (as at 30 October 2022).* Department of Education. https://app.powerbi.com/view?r=eyJrIjoiZjliY2Y1MjctYzM5OC00MDBjLThlOWUtZTVhZjQ5YmRiOWI5IiwidCI6ImRkMGNmZDE1LTQ1NTgtNGIxMi04YmFkLWVhMjY5ODRmYzQxNyJ9

Department of Health and Aged Care. (2021). *Mental Health National Outcomes and Casemix Collection: Overview of clinician-rated and consumer self-report measures, Version 2.1*.

https://www.amhocn.org/__data/assets/pdf_file/0005/698783/nocc_clinician_and_self-report_measures_overview_v2.1_20210913_1.pdf.

Dilly, M., Tipold, A., & Geuenich, K. (2016). Stressed out or subjective acquisition of competence – how do veterinary students see their curative work placement? *GMS Journal for Medical Education, 33*(1).

Eldridge, S. (n.d). Survivorship bias. *Encyclopedia Britannica.* Retrieved September 10, 2023, from https://www.britannica.com/science/survivorship-bias

Elston, D. M. (2021). Participation bias, self-selection bias, and response bias. *Journal of the American Academy of Dermatology*, *18*(1).

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*(2), 1149-1160.

Foote, A. (2023). Burnout, compassion fatigue and moral distress in veterinary professionals. *The Veterinary Nurse, 14*(2).

Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). *Frost Multidimensional Perfectionism Scale (FMPS)* [Database record]. APA PsycTests.

Gibson, J., & Quain, A. (2022). Embracing clinical ethics support services in the UK veterinary profession. *In Practice, 44*(7), 421-425.

Graaf, G. (2005). Veterinarians' Discourses on Animals and Clients. *Journal of Agricultural and Environmental Ethics, 18,* 557-578.

Hafen Jr, M., Reisbig, A. M. J., White, M. B., & Rush, B. R. (2008). The First-Year Veterinary Student and Mental Health: The Role of Common Stressors. *Journal of Veterinary Medical Education, 35*(1), 102-109.

Haghighat, S., Borhani, F., & Ranjbar, H. (2020). Is there a relationship between moral competencies and the formation of professional identity among nursing students?. *BMC Nursing, 19*, 49.

Hawkins, C., Watt, H., & Sinclair, K. (2006). Psychometric Properties of the Frost Multidimensional Perfectionism Scale wWith Australian Adolescent Girls. *Educational and Psychological Measurement, 66*(6), 1001-1022.

Holden, C. L. (2020). Characteristics of Veterinary Students: Perfectionism, Personality Factors, and Resilience. *Journal of Veterinary Medical Education, 47*(4), 488-496.

Jones-Fairnie, H., Ferroni, P., Silburn, S., & Lawrence, D. (2008). Suicide in Australian veterinarians. *Australian Veterinary Journal, 86*(4), 114-116.

Kipperman, B. S., Kass, P. H., & Rishniw, M. (2017). Factors that influence small animal veterinarians' opinions and actions regarding cost of care and effects of economic limitations on patient care and outcome and professional career satisfaction and burnout. *Journal of the American Veterinary Medical Association, 250*(7), 785-794.

Kogan, L. R., & Rishniw, M. (2023). Veterinarians and moral distress. *Journal of the American Veterinary Medical Association, 261*(5), 1-7.

Kondrup, S. V., Anhøj, K. P., Rødsgaard-Rosenbeck, C., Lund, T. B., Nissen, M. H., & Sandøe, P. (2016). Veterinarian's dilemma: a study of how Danish small animal practitioners handle financially limited clients. *The Veterinary record, 179*(23), 596.

Kornblum, M., & Ainley, M. (2005). Perfectionism and the gifted: A study of an Australian school sample. *International Education Journal, 6*(2), 232-239.

Lewis, E. G., & Cardwell, J. M. (2017). A comparative study of mental health and wellbeing among UK students on professional degree programmes. *Journal of Further and Higher Education, 43*(9), 1226-1238.

Lewis, E. G., & Cardwell, J. M. (2020). The big five personality traits, perfectionism and their association with mental health among UK student on professional degree programs. *BMC Psychology, 8*, 54.

Lohkee, S., & Hogg, R. C. (2021). Depression, stress and self-stigma towards seeking psychological help in veterinary students. *Australian Veterinary Journal, 99*(7), 309-317.

Matte, A. R., Khosa, D. K., Coe, J. B., & Meehan, M. P. (2019). Impacts of the process and decision- making around companion animal euthanasia on veterinary wellbeing. *Veterinary Record, 185*(15), 480.

McArthur, M. L., Andrews, J. R., Brand, C., & Hazel, S. (2017). The Prevalence of Compassion Fatigue among Veterinary Students in Australia and the Associated Psychological Factors. *Journal of Veterinary Medical Education, 44*(1), 9-21.

McArthur, M. L., Learey, T. J., Jarden, A., Gelderen, I. V., Hazel, S. J., Cake, M. A., Mansfield, C. F., Zaki, S., & Matthew, S. M. (2021). Resilience of veterinarians at different career stages: The role of self-efficacy, coping strategies and personal resources for resilience in veterinary practice. *Veterinary Record, 189*(12), e771.

McArthur, M. L., Mansfield, C., Matthew, S., Zaki, S., Brand, C., Andrews, J., & Hazel, S. (2017). Resilience, Mindfulness and Mindset: Resilience in Veterinary Student and the Predictive Role of Mindfulness and Self-Compassion. *Journal of Veterinary Medical Educatoin, 44*(1), 106-115.

Melville, A., & Hincks, D. (2016). *Conducting Sensitive Interviews: A Review of Reflections.* Law and Method.

Memon, M. A., Ting, H., Cheah, J., Thurasamy, R., Chuah, F., & Cham, T. H. (2020). Sample Size for Survey Research: Review and Recommendations. *Journal of Applied Structural Equation Modeling, 4*(2), 1-20.

Milner, A., Badland, H., Kavanagh, A., & LaMontage, A. D. (2017). Time Spent Commuting to Work and Mental Health: Evidence From 13 Waves of an Australian Cohort Study. *American Journal of Epidemiology, 186*(6), 659-667.

Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive Statistics and Normality Tests for Statistical Data. *Annals of Cardiac Anaesthesia, 22*(1), 67-72.

Montoya, A. I. A. (2022). Attrition of veterinarians from clinical practice and the influence of moral distress [Doctoral thesis, University of Adelaide]. The University of Adelaide Research Theses. https://hdl.handle.net/2440/136564

Montoya, A. I. A, Hazel, S., Matthew, S. M., & McArthur, M. L. (2019). Moral distress in veterinarians. *Veterinary Record, 185*(20), 631.

Moses, L., Malowney, M. J., & Boyd, J. W. (2018). Ethical conflict and moral distress in veterinary practice: A survey of North American veterinarians. *Journal of Veterinary Internal Medicine, 32*(6), 2115-2122.

Oh, Y., & Gastmans, C. (2013). Moral distress experienced by nurses: A quantitative literature review. *Nursing Ethics, 22*(1), 15-31.

Platt, B., Hawton, K., Simkin, S., & Mellanby, R. J. (2010). Systematic review of the prevalence of suicide in veterinary surgeons. *Occupational medicine, 60*(6), 436-446.

Pohl, R., Botscharow, J., Böckelmann, I., & Thielmann, B. (2022). Stress and strain among veterinarians:; a scoping review. *Irish Veterinary Journal, 75*, 15.

Reisbig, A. M., Danielson, J. A., Wu, T. F., Hafen, M., Jr, Krienert, A., Girard, D., & Garlock, J. (2012). A study of depression and anxiety, general health, and academic performance in three cohorts of veterinary medical students across the first three semesters of veterinary school. *Journal of Veterinary Medical Education, 39*(4), 341–358.

Riley, R. D., Ensor, J., Snell, K. I., Harrell, F. E., Martin, G. P., Reitsma, J. B., Moons, K. G., Collins, G., & Van Smeden, M. (2020). Calculating the sample size required for developing a clinical prediction model. *BMJ*, *368*, m441.

Stark, C., & Dougall, N. (2012). Effect of attitudes to euthanasia on vets' suicide risk. *Veterinary Record, 171*, 172-173.

Steffey, M. A., Griffon, D. J., Risselada, M., Scharf, V. F., Buote, N. J., Zamprogno, H., & Winter, A. L. (2023). Veterinarian burnout demographics and organizational impacts: a narrative review. *Frontiers in Veterinary Science, 10*.

Social Research Centre. (2022). *2022 GOS-L National Report.* https://www.qilt.edu.au/docs/default-source/default-document-library/2022-gos-l-national-report.pdf?sfvrsn=a3a778dc_8

Stöber, J. (1998). The Frost Multidimensional Perfectionism Scale: More perfect with four (instead of six) dimensions. *Personality and Individual Differences, 24*(4), 481-491.

The Australian Veterinary Association. (2021). *Australian Veterinary Workforce Survey 2021.* The Australian Veterinary Association Limited. https://www.ava.com.au/siteassets/news/ava-workforce-survey-analysis-2021-final.pdf

The Australian Veterinary Association. (2023). *AVA Federal Government Pre-Budget Submission (May 2023 Budget)*. The Australian Veterinary Association Limited. https://www.ava.com.au/globalassets/authors/ava---federal-pre-budget-submission-2023-24-_final-20230124.pdf

The Australian Veterinary Association., & Superfriend. (2021). *Australian Veterinary Association Veterinary Wellness Strategy – Final Report*. The Australian Veterinary Association Limited.

https://www.ava.com.au/siteassets/resources/thrive/documents/ava-sf-veterinary-wellness-report-oct2021.pdf

The Upper House Portfolio Committee No. 4 – Regional NSW. (2023, June 14). *NSW Upper House committee seeking submissions on veterinary workforce shortage in New South Wales* [Press release]. https://www.parliament.nsw.gov.au/lcdocs/other/18293/NSW%20Upper%20House%20committee%20seeking%20submissions%20on%20veterinary%20workforce%20shortage%20in%20New%20South%20Wales.pdf

Verrinder, J. M. & Phillips, C. Identifying Veterinary Students' Capacity for Moral Behavior Concerning Animal Ethics Issues. *Journal of Veterinary Medical Education, 41*(4), 358-370.

Volk, J. O., Schimmack, U., Strand, E. B., Rein, A., Vasconcelos, J., Hahn, J., Stiefelmeyer, K., & Probyn-Smith, K. (2022). Executive summary of the Merck Animal Health Veterinarian Wellbeing Study III and Veterinary Support Staff Study. *Journal of the American Veterinary Medical Association, 260*(12), 1547-1553.

Wallace, J. E. (2019). Meaningful work and well-being: a study of the positive side of veterinary work. *Veterinary Record, 185*(18), 571.

Wang, X., & Cheng, Z. (2020). Cross-Sectional Studies: Strengths, Weaknesses, and Recommendations. *CHEST, 158*(1), S65-S71.

Wells, J., Watson, K., Davis, R. E., Quadri, S. S. A., Mann, J. R., Verma, A., Sharma, M., & Nahar, V. K. (2021). Associations among Stress, Anxiety, Depression, and Emotional Intelligence among Veterinary Medicine Students. *International Journal of Environmental Research and Public Health, 18*(8), 3934.

Whitnall, V. M., & Simmonds, J. G. (2021). Occupational stress and coping strategies in experienced Australian veterinarians. *Vet Record, 189*(2), e202.

Wilson, M. A. (2018). Analysis and evaluation of the moral distress theory. *Nurse Form, 53,* 259-266.

Yang, H., Ward., M., & Fawcett, A. (2019), DVM students report higher psychological distress than Australian public, medical students, junior medical officers and practicing veterinarians. *Australian Veterinary Journal, 97*(10), 373-381.

Zenner, D., Burns, G. A., Ruby, K. L., Debowes, R. M., & Stoll, S. (2005). Veterinary students as elite performers: preliminary insights. *Journal of Veterinary Medical Education, 32*(2), 242–248.

Appendix A

Survey Questions

Part 1: Demographics

1. What is your age in years? (open text box)
2. What is your sex assigned at birth?
    - Male
    - Female
    - Intersex
    - Prefer not to answer
3. Gender refers to current gender, which may be different to sex recorded at birth and may be different to what is indicated on legal documents. Please select one option.
    - Man or Male
    - Woman or Female
    - Non-binary
    - [I/They] use a different term (please specify) (open text box)
    - Prefer not to answer
4. In what country were you born? (open text box)
5. Which of the following best represents your ethnic heritage? (Peoples' ethnicity describes their feeling of belonging and attachment to a distinct group of a larger population that shares their ancestry, colour, language or religion)
    - African
    - American
    - Asian
    - Australian
    - European
    - Indigenous Australian
    - Maori or Pacific Islander
    - Middle Eastern
    - Other (Please specify)
6. What is your current relationship status?
    - Single
    - In a relationship

- Married
- Separated/Divorced
- Widowed

7. Which of the following best describes your occupation status?
   - Study and full-time work (35 hours or more a week)
   - Study and part-time work (less than 35 hours a week)
   - Study only
   - Other: Please specify
8. What is your current post code? (Open text box)
9. Did you need to relocate to study to become a veterinarian (i.e., move within your state from a rural to metropolitan area OR move states)?
   - Yes
   - No
10. If answered yes to Question 9 - What was your post code before relocating for your university veterinary studies? (Open text box)

Part 2: Veterinary Experience

11. Have you ever lived on a farm?
    - Yes
    - No
12. Have you ever worked in a veterinary practice?
    - Yes
    - No
13. If Yes to Question 12, do you currently work in a veterinary practice?
    - Yes
    - No
14. What level degree are you currently studying?
    - Undergraduate degree (i.e., Bachelor)
    - Postgraduate degree (i.e., Doctorate)
15. What is the name of the degree you are currently studying?
    - Bachelor of Veterinary Biology
    - Bachelor of Science (Veterinary Bioscience)
    - Bachelor of Veterinary Science
    - Bachelor of Veterinary Science (Honours)

- Bachelor of Veterinary Medicine and Surgery
- Bachelor of Veterinary Biology/Bachelor of Veterinary Science
- Bachelor of Science
- Doctor of Veterinary Medicine
- Other (open text box)

16. How many years of university study towards becoming a veterinarian have you **completed**?

- 1
- 2
- 3
- 4
- 5
- Other: Please specify (open text box)

17. In your current university degree, which year level are you in?

- 1
- 2
- 3
- 4
- 5
- 6

18. Have you completed at least one week of placement during your university veterinary studies?

- Yes
- No

If response = no, participants will be directed to a survey exit page as they are not eligible for the study.

19. How many placements have you completed during your university veterinary studies? (open text box)
20. How many **WEEKS** of placement have you completed during your university veterinary studies? (open text box)
21. Which types of animal placement have you undertaken so far during your **undergraduate** degree? You may select more than one option.
    - Companion animals

- Equine
- Laboratory animals
- Aquatic species
- Production animas: Alpacas (Meat)
- Production animals: Alpacas (Wool)
- Production animals: Cattle (Beef)
- Production animals: Cattle (Dairy)
- Production animals: Sheep (Meat)
- Production animals: Sheep (Wool)
- Intensive - Chickens
- Intensive - Fish
- Intensive - Pigs
- Wildlife – Native
- Wildlife – Zoo animals
- Other (please specify) (open text box)

22. Which types of animal placement have you undertaken so far during your **postgraduate** degree? You may select more than one option. *

- Companion animals
- Equine
- Laboratory animals
- Aquatic species
- Production animas: Alpacas (Meat)
- Production animals: Alpacas (Wool)
- Production animals: Cattle (Beef)
- Production animals: Cattle (Dairy)
- Production animals: Sheep (Meat)
- Production animals: Sheep (Wool)
- Intensive - Chickens
- Intensive - Fish
- Intensive - Pigs
- Wildlife – Native
- Wildlife – Zoo animals
- Other (please specify) (open response)

**Only participants who selected "post graduate" in response to Q14 will be directed to answer Q20.*

Part 3: Attrition

23. Are you intending to continue your veterinary studies?
    - Yes
    - No
    - Unsure - Please explain (open text box)
24. Are you planning to commence a veterinary career after completing your studies?
    - Yes
    - No
    - Unsure – Please explain (open text box)

Part 3: Moral Distress

As a veterinary student, in relation to the following situations, how often do they occur and how distressing do you find them?

Scored on the following 5 point Likert scale:

0= Not applicable

1= Never/ not distressing

2= Occasionally/slightly distressing

3= Frequently/distressing

4= Very frequently/very distressing

25. How often does this occur? - Participate on a team that gives inconsistent messages to clients
26. How distressing do you find it? - Participate on a team that gives inconsistent messages to clients
27. How often does this occur? - Experiencing lack of administrative action or support for a problem that is compromising patient and/or client care
28. How distressing do you find it? - Experiencing lack of administrative action or support for a problem that is compromising patient and/or client care
29. How often does this occur? - Working within power hierarchies in teams, units and in my practice (or institution) that compromise patient and/or client care
30. How distressing do you find it? - Working within power hierarchies in teams, units and in my practice (or institution) that compromise patient and/or client care
31. How often does this occur? - Witnessing low quality of patient and client care due to poor team communication

32. How distressing do you find it? - Witnessing low quality of patient and client care due to poor team communication
33. How often does this occur? - Being required to care for patients who have inconsistent or unclear treatment plans or who lack goals of care
34. How distressing do you find it? - Being required to care for patients who have inconsistent or unclear treatment plans or who lack goals of care
35. How often does this occur? - Assisting other veterinarians who were providing incompetent care
36. How distressing do you find it? - Assisting other veterinarians who were providing incompetent care
37. How often does this occur? - Working in a situation where the client would not pay for the recommended treatment
38. How distressing do you find it? - Working in a situation where the client would not pay for the recommended treatment
39. How often does this occur? - Being unable to provide optimal care due to pressures from clients to reduce costs
40. How distressing do you find it? - Being unable to provide optimal care due to pressures from clients to reduce costs
41. How often does this occur? - Carrying out the client's wishes that were not in the best interest of the patient
42. How distressing do you find it? - Carrying out the client's wishes that were not in the best interest of the patient
43. How often does this occur? - Performing euthanasia for reasons I do not agree with
44. How distressing do you find it? - Performing euthanasia for reasons I do not agree with
45. How often does this occur? - Being required to work with abusive clients
46. How distressing do you find it? - Being required to work with abusive clients
47. How often does this occur? - Continue providing aggressive treatment to a patient who is most likely to die regardless of this treatment
48. How distressing do you find it? - Continue providing aggressive treatment to a patient who is most likely to die regardless of this treatment
49. How often does this occur? - Participate in care and procedures I do not agree with, but doing so because of fears of failing my placement
50. How distressing do you find it? - Participate in care and procedures I do not agree with, but doing so because of fears of failing my placement

51. How often does this occur? - Witness a violation of standard of practice or code of ethics and do not feel sufficiently supported to report the violation
52. How distressing do you find it? - Witness a violation of standard of practice or code of ethics and do not feel sufficiently supported to report the violation
53. How often does this occur? - Feel the pressure to order or carry out orders for what I consider to be unnecessary or inappropriate tests and treatments
54. How distressing do you find it? - Feel the pressure to order or carry out orders for what I consider to be unnecessary or inappropriate tests and treatments
55. How often does this occur? - Participate in care and procedures I do not agree with, but doing so because of fears of litigation or complaints
56. How distressing do you find it? - Participate in care and procedures I do not agree with, but doing so because of fears of litigation or complaints
57. Which placement/s, if any, have you found to be the most distressing? You may select more than one option.
    - Companion animals
    - Equine
    - Laboratory animals
    - Aquatic species
    - Production animas: Alpacas (Meat)
    - Production animals: Alpacas (Wool)
    - Production animals: Cattle (Beef)
    - Production animals: Cattle (Dairy)
    - Production animals: Sheep (Meat)
    - Production animals: Sheep (Wool)
    - Intensive - Chickens
    - Intensive - Fish
    - Intensive - Pigs
    - Wildlife – Native
    - Wildlife – Zoo animals
    - Other (please specify) (open text box)

Part 4: Perfectionism

Please answer the following questions in relation to how much they apply to you. Do not spend too much time on any one question.

Scored on the following 5 point Likert Scale:

1= Strongly disagree

2= Disagree

3= Neutral

4= Agree

5= Strongly agree

56. Organisation is very important to me
57. If I do not set the highest standards for myself, I am likely to end up a second-rate person
58. It is important to me that I be thoroughly competent in what I do
59. I am a neat person
60. I try to be an organised person
61. If I fail at work/school, I am a failure as a person
62. I should be upset if I make a mistake
63. I set higher goals than most people
64. If someone does a task at work/school better than I do, then I feel as if I failed the whole task
65. If I fail partly, it is as bad as being a complete failure
66. I am very good at focusing my efforts on attaining a goal
67. Even when I do something very carefully, I often feel that it is not quite right
68. I hate being less than the best at things
69. I have extremely high goals
70. People will probably think less of me if I make a mistake
71. If I do not do as well as other people, it means I am an inferior being
72. Other people seem to accept lower standards from themselves than I do
73. If I do not do well all the time, people will not respect me
74. I try to be a neat person
75. I usually have doubt about the simple everyday things that I do
76. Neatness is very important to me
77. I expect higher performance in my daily tasks than most people
78. I am an organised person
79. I tend to get behind in my work because I repeat things over and over
80. It takes me a long time to do something “right”
81. The fewer mistakes I make, the more people will like me
82.

Part 5: Wellbeing

Please read each question and tick the box by the ONE statement that best describes how things have been for YOU during the past month. There are no right or wrong answers.

83. During the past month, how much of the time were you a happy person?
    - 1= All of the time
    - 2= Most of the time
    - 3= A good bit of the time
    - 4= Some of the time
    - 5= A little of the time
    - 6= None of the time
84. How much of the time, during the past month, have you felt calm and peaceful?
    - 1= All of the time
    - 2= Most of the time
    - 3= A good bit of the time
    - 4= Some of the time
    - 5= A little of the time
    - 6= None of the time
85. How much of the time, during the past month, have you been a very nervous person?
    - 1= None of the time
    - 2= A little of the time
    - 3= Some of the time
    - 4= A good bit of the time
    - 5= Most of the time
    - 6= All of the time
86. How much of the time, during the past month, have you felt downhearted and blue?
    - 1= None of the time
    - 2= A little of the time
    - 3= Some of the time
    - 4= A good bit of the time
    - 5= Most of the time
    - 6= All of the time
87. How much of the time, during the past month, have you felt so down in the dumps that nothing could cheer you up?

- 1= None of the time
- 2= A little of the time
- 3= Some of the time
- 4= A good bit of the time
- 5= Most of the time
- 6= All of the time

Part 6: Open Response Questions

88. What impact, if any, does seeing animals treated in a way that contradicts your ethical/moral values have on your intention to stay in the industry? (open text box)
89. How adequately do you think your university veterinary studies have taught you the necessary knowledge and skills to address animal ethics issues? (open text box)
90. How adequately do you think your university veterinary studies have taught you the knowledge and skills to address your reactions to animal ethics issues? (open text box)
91. What more could be done to better prepare veterinary students to cope with seeing animals treated in a way that contradicts their ethical/moral values? (open text box)

Appendix B

Participant Information Sheet and Consent

PROJECT TITLE: Exploring moral distress among veterinary students

SCHOOL OF PSYCHOLOGY RESEARCH ETHICS SUB-COMMITTEE APPROVAL NUMBER: 23/24
PRINCIPAL INVESTIGATOR: XXXX
STUDENT RESEARCHER: XXXX
STUDENT'S DEGREE: Honours Degree of Bachelor of Psychology (Advanced)

Dear Participant,

You are invited to participate in the research project described below.

What is the project about?

This project aims to explore levels of moral distress in veterinary students and factors associated with moral distress.

Who is undertaking the project?

This project is being conducted by XXXX. This research will form the basis for the degree of Honours Degree of Bachelor of Psychology (Advanced) at the University of Adelaide under the supervision of XXXX.

Why am I being invited to participate?

You are being invited as you are a university student (16+ years of age), fluent in English, undertaking a degree (undergraduate or postgraduate) that leads to qualification to practice as a veterinarian in Australia.

What am I being invited to do?

You are being invited to complete an online survey about your demographic (background) information, veterinary experience, experiences of moral distress, perfectionism and wellbeing. As this is an online survey, you can complete it on any device from any location with internet access.

How much time will my involvement in the project take?

The survey is anticipated to take approximately 30 minutes of your time.

Are there any risks associated with participating in this project?

There is minimal to no risk associated with participating in this project. Should you require support you can contact Lifeline on 13 11 14 or Beyond Blue on 1300 224 636.

What are the potential benefits of the research project?

Understanding moral distress levels and factors associated with moral distress is important for improving the welfare of students starting a career in the veterinary industry, as well as contributing to the literature aimed at reducing the shortage of veterinary professionals in Australia. The findings of this study may provide information to help the industry better prepare students for moral distress, provide support during morally distressing scenarios, improving the wellbeing of veterinary students, and decrease the number of people leaving the veterinary field.

Can I withdraw from the project?

Participation in this project is completely voluntary. If you agree to participate, you can withdraw from the study at any time before submitting your survey responses.

What will happen to my information?

Confidentiality and Privacy: Participant names will not be used in this research. Participants will not be identified in any publication or presentation resulting from the research.
Storage: All information and data for this project will be stored securely. All electronic data collected will be stored according to the University of Adelaide's policy, on a secure server with password protection. This data will be stored for a period of five years post-publication and will only be accessible by the researchers.
Publishing: You will not be identified in any publications; only summary data will be published. Findings from the research may be published as a book, thesis, journal article, news article, report, on a website and in conference presentations.
Sharing: Data will be made available for use in future studies as indicated on your consent form. Only your de- identified information will be used in the future. Your email address will be stored separately from your responses to the questionnaire. This de-identified data may be shared with other researchers according to your consent.

Should you wish to receive a copy of the research findings you may provide an email address at the end of the survey.

Your information will only be used as described in this Participant Information Sheet and it will only be disclosed according to the consent provided, except as required by law.

Who do I contact if I have questions about the project?

Should you have any further questions about the project, please contact XXXX (email: XXXX) or XXXX (phone: XXXX or email: XXXX)

What if I have a complaint or any concerns?

The study has been approved by the School of Psychology Research Ethics Sub-Committee at the University of Adelaide (23/24). This research project will be conducted according to the NHMRC National Statement on Ethical Conduct in Human Research 2007 (updated 2018). If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the Principal Investigator. If you wish to speak with an independent person regarding concerns or a complaint, the University's policy on research involving human participants, or your rights as a participant, please contact the Convenor, Human Research Ethics Sub-Committee (School of Psychology) on:

Phone: +61 [redacted] Email: [redacted]@adelaide.edu.au

Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

If I want to participate, what do I do?

If you want to participate, please complete the consent questions and then continue to the online questionnaire.

Yours sincerely, **XXXX** and **XXXX**

Support Resources
To talk to someone right away:

• Lifeline
Available 24/7: 13 11 14

• Beyond Blue
Available 24/7: 1300 224 636

Consent

1. I have read and understood the above information and provide consent for my survey responses to be included in this research:

   Yes – I provide my consent
   No – I do not wish to continue

2. I hereby provide 'extended' consent for the use of my data in future research conducted by the same or other researchers, for projects that are an extension of, or closely related to, the original project

   Yes
   No

Please note that you can withdraw from this research at any time until you submit your survey.

Appendix C

Flyer

THE UNIVERSITY of ADELAIDE

School of Psychology

PARTICIPANTS INVITED

We are seeking participants to take part in a study

Exploring Moral Distress Among Veterinary Students

Moral distress is the feeling of powerlessness, anger, and guilt that healthcare and veterinary professionals experience when they are unable to practice according to their own ethical standards.

This study aims to investigate the levels of moral distress in veterinary students, and the factors associated with moral distress.

Your participation would involve completing an online survey (approximately 30 minutes) about your background, veterinary experience, perfectionism, wellbeing and experience/s of moral distress.

To be eligible you must be a student 16+ years currently studying a university degree (undergraduate or postgraduate) that leads to qualification to practice as a veterinarian in Australia.

To participate in the survey please access via the QR code or the following link:

For more information about this research study, or to volunteer, please contact:

XXXX or XXXX (School of Psychology) at:

XXXX

This study has been reviewed and approved by the School of Psychology Research Ethics Sub-Committee at the University of Adelaide (23/24).

Appendix D

Social Media Posts

We are seeking veterinary students aged 18 and above to take part in a study of

Exploring moral distress among veterinary students

Moral distress is the feeling of powerlessness, anger, and guilt that healthcare and veterinary professionals experience when they are unable to practice according to their own ethical standards. This study aims to investigate the levels of moral distress in veterinary students, and the association to factors such as trait perfectionism and wellbeing.

https://adelaideunisop.syd1.qualtrics.com/jfe/form/SV_d4KC3gDpOzma2HA

For more information about this research study please contact:
XXXX or XXXX (School of Psychology) at:
XXXX
XXXX

Appendix E

Email of Introduction

Exploring Moral Distress Among Veterinary Students

Chief Investigator: XXXX

Dear XXX,

My name is XXXX and I am a Bachelor of Psychology (Advanced) (Honours) student at the University of Adelaide. I am conducting a study exploring moral distress among students studying in Australia to become veterinarians.

I have attached further information about this research, including a flyer and information sheet which explains what is required of participants (an online survey) and my contact details. I would greatly appreciate it if you could share this information through your networks, to assist in finding students 16+ years currently studying a university degree (undergraduate or postgraduate) that leads to qualification to practice as a veterinarian in Australia who would like to participate in my research.

In addition to my thesis, I will produce a report outlining the findings and any recommendations from the project and I can share this with you.

My research supervisor is XXXX who is an experienced Clinical and Health Psychologist. This research has been approved by School of Psychology Human Research Ethics Sub-Committee, 23/24.

Please let me know if you have any questions. I am available to talk to anyone who is interested in participating or has any queries.

Kind Regards,
XXXXX
University of Adelaide
Attachments: Flyers and Information Sheet

Appendix F

Perfectionism

Table 6

Descriptive Statistics for FMPS Perfectionism Subscales (n = 156)

	M	*SD*	Range	
			Participants	Measure
FMPS Subscale 1[a]	43.7	9.7	17-63	13-65
FMPS Subscale 2[b]	27.3	4.8	14-35	7-35
FMPS Subscale 3[c]	24.8	3.6	14-30	6-30

[a] FMPS Subscale 1 = 'Concerns over mistakes and doubt actions.' [b] FMPS Subscale 2 = 'Excessively high personal standards'. [c] FMPS Subscale 3 = 'Concern with precision, order, and organisation'.

Table 7

Correlations Between Moral Distress and Perfectionism (n = 156)

	1	2	3	4
1. Moral Distress	-			
2. FMPS Subscale 1[a]	.17*	-		
3. FMPS Subscale 2[b]	.09	.44**	-	
4. FMPS Subscale 3[c]	.04	.17*	.09	-

Note. * $p < .01$ (two tailed). ** $p < .05$ (two tailed).

[a] FMPS Subscale 1 = 'Concerns over mistakes and doubt actions.' [b] FMPS Subscale 2 = 'Excessively high personal standards'. [c] FMPS Subscale 3 = 'Concern with precision, order, and organisation'.