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### Personal attributes shaping attitudes towards animal welfare among veterinary students and faculty members

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#### Abstract

The attitudes of students and veterinary faculty members towards animal welfare are foundational to the ethical practice of veterinary medicine, influencing education, professional conduct, public perception, policy advocacy, research integrity, and personal fulfillment within the field. So current study was conducted was conducted on 50 veterinary students and 50 faculty members in Lala Lajpat Rai University of Veterinary and Animal Sciences located in Hisar to study the relationship of attitude of veterinary students and faculty members with personal attributes (Age, Gender, Educational qualification, History of pets, Vegetarianism, Conscientiousness, Extraversion, Belief in animal mind, Religiousness, Economic motivation). It was found that gender, dietary preference, religiousness and economic motivation were significantly associated with the attitude favourableness of the respondents. Further research is required to understand the factors underlying human animal relations.

**Keywords:** Attitude, animal welfare, attributes, students, faculty members

#### Introduction

Attitudes towards animal welfare among students and veterinary faculty members have far-reaching implications for environmental sustainability, interdisciplinary collaboration, mitigation of welfare issues, and cultural sensitivity in global veterinary practices. Animal welfare has attracted increased media attention in recent years, with society becoming more aware about the link between animals' well-being and human health and the impact of the livestock industry on the environment (Eurobarometer, 2016) [7]. In general, animal welfare is independent of the country where the animals are raised, but approaches to animal welfare may differ among countries also in relation to how different animal species are perceived (Nielsen *et al.*, 2012) [17]. The consideration of the physiological and behavioral needs of animals and the price a country is willing to pay to improve animal welfare can influence education, guidelines, and legislation developed to change the way animals are raised within a country (Nielsen *et al.*, 2012; Proctor *et al.*, 2013) [17, 20]. Moreover these attitudes

shape the future of veterinary care and contribute to broader efforts in animal welfare and ethical treatment globally.

India is one of the fastest growing economies in the world, with increasing demand of livestock products which will create pressures in favour of factory farming. Simultaneously, demands for higher animal welfare are being heard every now and then and are expected to continue to grow in future. The animal production practices are expected to conform to the societal expectations of animal welfare. So there is need to understand the individual attributes affecting attitude formation towards animal welfare.

Different personal factors (gender, age, educational level, early environment, experience with animals), and cultural factors (history, religious beliefs) (Driscoll, 1992; Serpell, 2004; Borgi and Cirulli (2015) [6, 21, 2] have been identified to affect animal welfare. Till now no empirical study have been conducted in the state to study the effect of individual traits on attitude formation towards animal welfare among veterinary students and faculty members. Therefore, the

present study was conceptualized to observe the relationship between personal attributes of veterinary students and faculty members and attitude towards animal welfare. Because by fostering positive attitudes towards animal welfare, the veterinary profession can lead efforts towards more compassionate, ethical, and sustainable interactions with animals worldwide.

### Materials and Methods

Present study was conducted with a sample size of 100 which includes 50 faculty members and 50 veterinary

students in the Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar. A random sample of ten students from each class of B.V.Sc. and AH programme (1-5 yrs) was drawn constituting a total sample size of 50 students. Similarly faculty members were chosen using simple lottery method.

The antecedent variables likely to affect students' and scientists', History of pets, Vegetarianism Conscientiousness, Extraversion, Belief in mind, Religiousness and Economic motivation. These attributes were operationalized as shown in Table 1.

**Table 1:** operationalization of Antecedent Variables

Sr. No.	Antecedents	Operationalization
1.	Age	Chronological age of respondents
2.	Gender	State of being male or female
3.	Level of education	Academic qualification of the respondents
4.	History of pets	Experience of animal keeping
5.	Vegetarianism	Position on vegetarianism scale or meat eaters
6.	Conscientiousness	Using a version of five factor personality inventory (Costa and MacCrae, 1985) <sup>[26]</sup>
7.	Extraversion	Using a modified version of five factor personality inventory (Costa and MacCrae, 1985) <sup>[26]</sup>
8.	Belief in mind	Scale developed by Hills (1995) with suitable modification
9.	Religiousness	Scale developed by Templer <i>et al.</i> , (2004) <sup>[26]</sup> with minor modification
10.	Economic motivation	Scale developed by Supe (1969)

### Results & Discussion

Table 2 present the results of relationship of attitude scores of respondents with antecedent variables. The correlation coefficients Evidently gender, dietary preference,

religiousness and economic motivation were significantly associated with the attitude favourableness of the respondents (Table 2).

**Table 2:** Correlation between personal attributes and attitude scores of respondents

S. No.	Independent Variables	Category of respondents and r-value		
		Students (n=50)	Scientists (n=50)	Total (n=100)
1	Age	0.093	-0.245	-0.071
2	Gender	0.424**	0.315	0.362**
3	Educational qualification	0.140	0.011	0.065
4	History of pets	-0.179	-0.030	-0.076
5	Vegetarianism	Freq	0.230	0.419**
		Non-Veg	-0.361	-0.491**
6	Conscientiousness	-0.078	0.011	-0.040
7	Extraversion	0.165	0.002	0.071
8	Belief in animal mind	0.163	0.188	0.170
9	Religiousness	0.187	0.330*	0.270**
10	Economic motivation	-0.227	-0.369*	-0.278**

\* $p < 0.05$ , \*\* $p < 0.01$

### Relationship between attitude scores of respondents and their age

Apparently the age of the respondents does not seem to be correlated with the attitude scores (Table 2). The respondents were categorized into three age groups i.e. young age group ( $\leq 30$  years), middle age group (31-55 years) and old age group ( $> 55$  years) for the analysis. It can be seen that the middle aged scientists scored highest in

terms of attitude scores as compared to other two categories although the differences were small (Table 3). Similar findings were reported by Signal and Taylor (2006) <sup>[25]</sup> who conducted a study and administered the Attitude to Animals Scale to a large community sample within Australia. Heleski *et al.*, (2004) <sup>[10]</sup> also did not find any significant correlation between attitude towards animals and age.

**Table 3:** Distribution of attitude scores of respondents of different age groups

Category	Age (yrs)	Attitude level			Total	*Avg score
		Less Favourable ( $\leq 55$ )	Favourable (56-65)	Strongly Favourable ( $> 65$ )		
		F (%)	F (%)	F (%)		
Students	Young (upto 30)	8 (16)	20(40)	22(44)	50	65.1
	Middle (31-45)	-	-	-	-	-
	Old (Above 45)	-	-	-	-	-
Scientists	Young (upto 30)	1(14.28)	1(14.28)	5(71.43)	7	65.28
	Middle (31-45)	1(5.26)	5(26.32)	13(68.42)	19	68.42
	Old (Above 45)	6(25)	3(12.5)	15(62.5)	24	63.21
Total	Young (upto 30)	9(15.79)	21(36.84)	27(47.37)	57	65.19
	Middle (31-45)	1(5.26)	5(26.32)	13(68.42)	19	68.42
	Old (Above 45)	6(25)	3(12.5)	15(62.5)	24	63.21

\*Avg score=average attitude score

### Relationship between gender and attitude scores of respondents

The results indicate that female respondents were having more favourable attitude towards animal welfare than the male respondents, the mean scores being 70.98 and 63.78, respectively (Table 4). The results of the study find agreement widely. A number of studies can be cited in support of the claim of the present study (Furnham and Pinder, 1990; Wells and Hepper, 1995; Paul and Podberscek, 2000; Heleski *et al.*, 2004; and Serpell, 2004)<sup>[9, 28, 18, 10, 21]</sup> Female students had greater concerns for animal

welfare and rights than males, especially in more gender empowered countries (Phillips *et al.*, 2011)<sup>[19]</sup>. The probable reasons for gender differences may be the sociocultural perspective, that women are socialised to care and nurture, whilst boys are encouraged to be less emotional and more utilitarian; that femininity leads to a more nurturance-expressive dimension of personality that is more highly related to concern for animal welfare, whilst masculinity relates to less sensitivity to the ethical treatment of other creatures (Herzog *et al.*, 1991)<sup>[11]</sup>.

**Table 4:** Distribution of attitude scores of respondents of different gender

Category	Gender	Attitude level			Total	Avg score
		Less Favourable ( $\leq 55$ )	Favourable (56-65)	Strongly Favourable ( $> 65$ )		
		F (%)	F (%)	F (%)		
Students	Male	6(16.22)	20(54.05)	11(29.73)	37	63.22
	Female	-	1(7.69)	12(92.31)	13	70.46
Scientists	Male	7 (16.67)	9(21.43)	26 (61.9)	42	64.33
	Female	1(12.5)	-	7 (87.5)	8	71.5
Total	Male	13(16.45)	29(36)	37 (46.84)	79	63.78
	Female	1(4.76)	1(4.76)	19 (90.48)	21	70.98

Differences in the mean attitude scores of respondents of both the genders were found statistically significant (Table

5). The female respondents were having significantly more favourable attitude towards animals.

**Table 5:** Table depicting results of z-test for comparing attitude scores of respondents of different gender.

Z-Test: Two Sample for Means			
Category	Z value	Z critical one-tail*	Z Critical two-tail**
Female-male	4.17816**	1.644854	1.959964

### Attitude scores of respondents based on their education level

As evident from the (Table 6) The students of 4th year of B.V.Sc and AH degree programme scored highest, but the variations among the different categories of respondents based on their educational level did not vary significantly. (Table 6) Surprisingly the correlation for attitude favourableness and veterinary education was found non-significant (Table 6). Earlier, Martinsen and Jukes (2005) conducted a study to know effectiveness of veterinary

education and concluded that veterinary education has not always met, and still often does not meet the essential criterion of ensuring the dignity and humane treatment of animals. The questionable role of veterinary education in framing the attitudes of the veterinarians may be due to that education within veterinary colleges that relates specifically to animal behavior and animal welfare is limited (Siegford, 2004)<sup>[23]</sup> and other factor play more important role than the education in attitude favourableness towards animal welfare.

**Table 6:** Distribution of attitude scores of respondents according to their education level

Category	Education level	Attitude level			Total	Avg score
		Less Favourable (<_55)	Favourabl (56-65)	Strongly Favourable (>65)		
		F (%)	F (%)	F (%)		
Students	B.V.Sc 1 <sup>st</sup> yr	2 (20)	6 (60)	2 (20)	10	63
	B.V.Sc2 <sup>nd</sup> yr	-	5 (50)	5 (50)	10	65.3
	B.V.Sc3 <sup>rd</sup> yr	3 (30)	3 (30)	4 (40)	10	62.8
	B.V.Sc4 <sup>th</sup> yr	-	2 (20)	8 (80)	10	70.1
	B.V.Sc5 <sup>th</sup> yr	1 (10)	5 (50)	4 (40)	10	64.3
Scientists	M.V.Sc	1 (9.09)	3(27.27)	7(63.64)	11	66
	PhD	8 (21.05)	4(10.53)	26(68.42)	38	65.37
	OQ	-	1(100)	-	1	64
Total	B.V.Sc 1 <sup>st</sup> yr	2(20)	6(60)	2(20)	10	63
	B.V.Sc2 <sup>nd</sup> yr	-	5(50)	5(50)	10	65.3
	B.V.Sc3 <sup>rd</sup> yr	3(30)	3(30)	4(40)	10	62.8
	B.V.Sc4 <sup>th</sup> yr	-	2(20)	8(80)	10	70.1
	B.V.Sc5 <sup>th</sup> yr	1(10)	5(50)	4(40)	10	64.3
	M.V.Sc	1(9.09)	3(27.27)	7(63.64)	11	66
	PhD	8(21.05)	4(10.53)	26(68.42)	38	65.37
	OQ	-	1(100)	-		64

### Attitude scores of respondents based on history of pet keeping

Nearly one fourth the respondents were having pets and nearly the same number did keep pets in the past. The remaining respondents did not have an exposure of the animal as a pet. Yet there attitude scores did not vary greatly (Table 7). The relationship between history of pets keeping and attitude moulding was found insignificant.

Some authors have reported that attitudes towards animal use are influenced by experience of animals (Wells and Hepper 1997) [28]. Theoretical reasons for this relationship may relate to the 'contact hypothesis' (e.g. Allport, 1954) [1] where contact with members of an outgroup (e.g. nonhuman animals) can lead to a mutual understanding and decreased prejudice towards that group. Thus experience of animals

could promote positive attitudes towards animals (e.g. by becoming emotionally attached to pets) and negative attitudes towards animal use (e.g. due to an increase in animal mind) (e.g. Lieberman and Chaiken 1996) [15]. But in most of the previous studies, the respondents were non-veterinarians. The not so significant correlation of veterinarians' attitudes and their experience with animals as pets may be because of the reasons cited earlier. Their attitudes undergoes change due to exposure to various training processes to make them professionals and progressively they starts showing less emotional attachment to animals. The other reason for non-significant result may be due to that only one-fourth of the respondents were having pets and did not constitute a very large sample.

**Table 7:** Distribution of attitude scores of respondents according to their history of pets

Category	History of pets	Attitude level			Total	Avg score
		Less Favourable (<_55)	Favourable (56-65)	Strongly Favourable (>65)		
		F (%)	F (%)	F (%)		
Students	No pets	2 (10.53)	6(31.58)	11(57.89)	19	66.47
	In past	-	9(56.25)	7(43.75)	16	65.33
	At present	4(26.67)	6(40)	5(33.33)	15	62.77
Scientists	No pets	4(12.5)	8(25)	20(62.5)	32	65.09
	In past	2(20)	1(10)	7(70)	10	66.9
	At present	2(25)	-	6(75)	8	65.25
Total	No pets	6(11.76)	14(27.45)	31(60.78)	51	65.78
	In past	2(7.69)	10(38.46)	14(53.85)	26	66.11
	At present	6(26.09)	6(26.09)	11(47.83)	23	64.01

### Attitude scores of respondents based on their dietary preferences

Vegans and milk consuming respondents showed more favourable attitude scores (Table 8) and among the non-vegetarians, the respondents who consumed meat diets less frequently were having more favourable attitude (Table 8). Vegetarianism was found a major factor associated with the attitude favourableness towards animal welfare (Tables 8 and 9 and 10).

The findings are somewhat similar to the previous studies. For example, Furnham *et al.* (2003) [8] reported that vegetarianism was a significant predictor of attitude towards animal experimentation and empathy. Weijden and Verhave (2013) [27] concluded that students that were vegetarian scored significantly higher on the Profit, Pest and Laboratory subscale. Same findings were reported by Taylor and Signal (2009) [25].

**Table 8:** Distribution of attitude scores of respondents based on their dietary preferences.

Category	Vegetarianism	Attitude level			Total	Avg score
		Less Favourable (< 55)	Favourable (56-65)	Strongly Favourable (>65)		
		F (%)	F (%)	F (%)		
Students	Lacto-vegans	1 (7.69)	2 (15.39)	10 (76.92)	13	67.2
	Non- vegetarians	5 (13.51)	19 (51.35)	13 (35.14)	37	65.66
Scientists	Lacto-vegans	-	3 (18.75)	15 (100)	18	70
	Non- vegetarians	10 (31.25)	4 (12.5)	18 (56.25)	32	57.28
Total	Lacto-vegans	1 (3.22)	5 (16.13)	25 (80.65)	31	68.6
	Non- vegetarians	13 (18.84)	25 (36.23)	31 (44.93)	69	61.54

**Table 9:** Distribution of attitude scores of respondents based on their frequency of meat eating

Category	Frequency of meat eating	Attitude level			Total	Avg score
		Less Favourable (≤55)	Favourable (56-65)	Strongly Favourable (>65)		
		F (%)	F (%)	F (%)		
Students	High(≤4)	3 (13.04)	11 (47.83)	9 (39.13)	23	63.04
	Low(>4)	3 (11.11)	12 (44.44)	12 (44.44)	27	66.85
Scientists	High(≤4)	7 (35)	3 (15)	10 (50)	20	61.95
	Low(>4)	1 (3.33)	6 (20)	23 (76.67)	30	67.83
Total	High(≤4)	10 (23.26)	14 (32.56)	19 (44.18)	43	64.95
	Low(>4)	4 (7.02)	18 (31.58)	35 (61.40)	57	67.34

Further, statistical comparison between the attitude scores of vegetarians and non-vegetarians yielded significant differences (Table 10)

**Table 10:** Comparison of means of vegetarian and non-vegetarian respondents using Z test

Z-Test: Two Sample for Means			
Category	Z value	Z critical one-tail*	Z Critical two-tail**
Veg-non veg	3.792398**	1.644854	1.959964

#### Attitude scores of respondents with different degrees of conscientiousness, Extraversion

Conscientiousness and Extraversion were measured using a modified version of Five factor personality inventory (Costa and MacCrae 1985) [26]. Both the Conscientiousness and extraversion scores of the respondents were found poorly correlated with their attitude favourableness (Table 2). The findings were somewhat similar to the previous findings of Kimball and Broida (1991) [14] who investigated the relationships between students' personality profiles (using the Myers-Briggs Type Indicator), and attitudes to animals and concluded that among extraverts, sensate and thinking types were found to favor vivisection more than did intuitive and feeling types. Intuitive types are said to make decisions based on general impressions and are less comfortable with routine, structured and mechanical approaches (ibid).

Furnham *et al.*, (2003) [8] also looked for links between personality and attitudes towards animals. They examined how the Big Five (Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness), empathy, and basic demographics were related to attitudes towards animals. Our data indicated that personality (at least as measured by paper and pencil assessment devices) was not a major factor in determining the attitudes of the respondents as found earlier by Mathews and Herzog, (1997) [16] who have also reported that measured differences in personality were only weakly related to attitudes toward the treatment of animals. It may be because of that this study was conducted on the respondents who were involved in the research as a course requirement. Previously most of the sociological/

psychological studies have focused on animal activists (Jamison and Lunch, 1992) [12] and reported personality dimensions as one of the important factor in deciding attitudes to animals. It is suggested that more empirical research is needed before conclusions can be made about personality and the psychology of veterinary students and scientist and their relation to the attitude favourableness and empathy with animals.

#### Attitude scores of respondents and their belief in animal mind (BAM)

Belief in animal mind is considered a good predictor of attitude favourableness towards animals. But the degree of association between the two was observed weak in the present study (Table 2). Further, the respondents with higher BAM scores obtained higher attitude scores than the respondents of lower BAM category (Table 2).

#### Attitude scores of the respondents according to their religiousness

Association between the degree of religiousness and the attitude favourableness of the respondents was significantly positive (Table 2). Further, the classification of the respondents into two categories was done. As can be seen the respondents with greater religiousness obtained higher scores than the respondents with lower religiousness (Table 11). This indicates that those with greater religious belief were more likely to have appositve attitude towards animal welfare. Findings are matching somewhat with the previous studies.

Literature is abound with both negative and positive correlation of religiousness with attitude towards animals. Templer *et al.*, (2004) [26] constructed a 12-item Animal-Human Continuity Scale with a Likert-type 7-option format to measure the extent to which the respondent views humans and animals in a dichotomous fashion vs. on a continuum and concluded that more traditionally religious participants tended to respond in the dichotomous direction.

Religiosity (i.e. both religious fundamentalism/conservatism and frequency of attendance at religious services) has been



linked to more materialistic and less affectionate attitudes to animals, although most such studies have focused exclusively on Western religions (Bowd and Bowd, 1989; Driscoll, 1992; Kellert and Berry, 1980) [3, 6, 13]. But a distinction has to be made between different religions. The religious and ideological beliefs and values may promote particular attitudes toward animals—both generally and specifically. The Judaeo-Christian worldview that animals were divinely created to serve human interests represents an example of a materialistic value orientation toward animals

promoted by religious ideology (Serpell, 1996) [22] and thus making negative attitudes towards animals. Contrary is the belief in Jainism and Buddhism.

The respondents in the study were Hindus and the results should be seen in this context also. Expectedly, those with higher religiousness were having comparably favourable attitude and higher empathy. The religion believes that humans are not more significant than any other living thing, animal souls are the same as human souls, progressing to higher means of conscious expression in each life.

**Table 11:** Distribution of attitude scores of respondents according to their religiousness

Category	Religiousness	Attitude level			Total	Avg score
		Less Favourable ( $\leq 55$ )	Favourable (56-65)	Strongly Favourable ( $>65$ )		
		F (%)	F (%)	F (%)		
Students	Low ( $\leq 8$ )	3(13.03)	14 (60.87)	6(26.09)	23	64.13
	High ( $>8$ )	5(18.52)	7(25.92)	15(55.56)	27	65.92
Scientists	Low ( $\leq 8$ )	4(33.33)	-	8(66.67)	12	62
	High ( $>8$ )	4(10.53)	9(23.68)	25(65.79)	38	66.58
Total	Low ( $\leq 8$ )	7(20)	14(40)	14(40)	35	63.06
	High ( $>8$ )	9(13.85)	16(24.62)	40(61.53)	65	66.25

Further, the two categories of respondents were compared for differences in mean scores using Z test. The differences observed were statistically significant (1.95945).

**Table 12:** Comparison of high and low religiousness respondents' attitude scores using Z test

Z-Test: Two Sample for Means			
Category	Z value	Z critical one-tail*	Z Critical two-tail**
High-low religiousness	1.75945*	1.644854	1.959964

#### Attitude scores of respondents based on their economic motivation levels

Economic motivation is generally considered as having associated with negative attitude to animal welfare. In fact, the whole of factory farming concept of animals is seen by many as associated with higher efficiency of production with an ultimate view to improve economics of production. In the present study also, the two factors seem to be correlated (Table 13). Further, the respondents with low economic motivation obtained highest attitude scores followed by the respondents with medium economic motivation as both were negatively and significantly correlated (Table 2). The respondents with high economic

motivation scored lowest as shown in Table 13).

Previously Signal and Taylor (2006) [25] found a small, but significant, negative correlation between Income and Animal Attitude Scale. He reported that those in the highest income category had the lowest overall AAS score while those in the lowest income had the highest AAS scores. The negative correlation of economic motivation with attitude favourableness to animals and empathy with animals can be explained in relation to a wider ideological perspective in terms of the 'world view' held by people (Buss *et al.*, 1986; Furnham and Pinder 1990) [4, 9]. Buss *et al.*, (1986) [4] identified two types of world view- one that values a high growth, high technology society, materialistic goals, and rational quantified decision-making processes, the other appreciating less material and technological growth, redistribution of wealth, goals of self-actualization, and decision making determined by non-materialistic values (people holding the former view would be more likely to earn less money compared to those holding the latter view) (ibid). The persons with more drive for money see animals from a utilitarian view and consequently exhibit indifference to their sentence thus contributing to the differences observed.

**Table 13:** Distribution of attitude scores of respondents based on their economic motivation levels

Category	Economic motivation	Attitude level			Total	Avg score
		Less Favourable ( $\leq 55$ )	Favourable (56-65)	Strongly Favourable ( $>65$ )		
		F (%)	F (%)	F (%)		
Students	Low (6-10)	--	2(33.33)	4(66.67)	6	71.33
	Medium (11-15)	4(15.38)	9(36.62)	13(50)	26	65
	High (16-20)	4(23.53)	9(52.94)	4(23.53)	17	63.06
Scientists	Low (6-10)	-	1(50)	1(50)	2	67
	Medium (11-15)	3(7.89)	8(21.05)	27(71.05)	38	67.13
	High (16-20)	5(50)	1(10)	4(40)	10	58.9
Total	Low (6-10)	--	3(37.5)	5(62.5)	8	69.16
	Medium (11-15)	7(10.94)	17(26.56)	40(62.5)	64	66.06
	High (16-20)	9(33.33)	10(37.04)	8(29.63)	27	60.98

## Conclusion

Gender, vegetarianism, economic motivation was found significantly correlated with the attitude formation ( $r=0.362^{**}$ ,  $0.422^{**}$ ,  $-0.278^{**}$ ;  $p<0.01$ ). The economic motivation and year of study for students were negatively and significantly correlated. The results indicate that the arguments that the contribution veterinary education makes attitudes of students more or less favourable are questionable. Moreover, the scientists' opinion do not vary greatly indicating the influence of cultural and traditional values. It requires further research to understand the factors underlying their human animal relations. Male and female ratio in veterinary profession is somewhat disturbing. It may be due to the masculine, tough minded ethos still pervading the profession. There is lack of agreement about the effect on attitudes toward the treatment of animals of various demographic and personality-related variables of veterinary students and scientists and requires further research.

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