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Students' beliefs in animal sentience: No decline across veterinary education

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Progress through veterinary education has been linked anecdotally with ‘emotional hardening’, in which students’ concern, respect and compassion for animals is reduced (e.g. Tiplady 2012, Lawrence 1997, Karafokas 2011). Blackshaw and Blackshaw (1993) found that Australian students perceived the process of veterinary education to be one of passage from sentimental client to cold-hearted clinician. And in apparent confirmation of this, surveys conducted in veterinary schools in the USA and Britain have shown that students in the early stages of veterinary education differ from their final-stage peers. Hellyer and others (1999) found a reduced willingness to treat animals for pain in fourth-year veterinary students compared to second-year students. And Paul and Podberscek (2000) found that first-year veterinary students rated the sentience of dogs, cats and cows (but not pigs) more highly than did final-year students. They hypothesized that the process of veterinary education involves the learning of attitudinal norms as well scientific facts; a process that in human medicine has been referred to as the “hidden curriculum” (Hafferty 1998). Specifically, it was suggested that veterinary students may develop increasingly Cartesian views of animals - as more machine-like and less person-like - as they move towards the role of a fully trained veterinary professional.

However, it remains uncertain whether these cross-sectional findings are indicative of a genuine change in the beliefs of individual students occurring during veterinary education, or whether the published studies have simply detected belief differences between cohorts of students that may, for other reasons, have remained different at all points during their university careers. The present study therefore investigated the relationship between stage of veterinary education and belief in animal sentience using a longitudinal study design in which the same students were sampled at both the beginning and end of their education. Using students enrolled at the School of Veterinary Sciences in Bristol in 2004, 2006 and 2007, participants were surveyed in their first year of veterinary education (5 months after the start of their course), and then again in their final year (1 month before their final examinations). Participation was voluntary, and data were stored and analysed anonymously and in accordance with the UK Data Protection Act.

The Beliefs in Animal Sentience Questionnaire (BiASQ) was a paper-based questionnaire designed to measure students’ beliefs about the capacity for sentience of ten species, including domestic and wild animals (dogs, rats, bees, sheep, rabbits, lions, chickens, spiders, cats and pigs). For each species, participants answered the question “How sentient would you

say each of these species are?” using a Likert-type response scale ranging from 1 = “Not at all” through to 9 = “Just like us” (humans). Sentience was defined as “capacity to feel”.

In total, 297 undergraduates completed the BiASQ during their first year of undergraduate study (86.8% response rate; mean age 19.26 years) and 218 of these completed it again in their final year (73.1 % re-completion rate; 78.8% female). Sources of variation in participants’ ratings of the sentience of the ten animal species were analysed using a mixed model GLM (SPSS 19), with year of sampling (first year, final year) as a within-subjects factor and gender (male, female) and year of enrolment (2004, 2006, 2007) as between-subjects factors (see Table 1).

Students’ ratings of the sentience capacities of bees diminished between their first and final years ($F_{(1,12)}=6.74$ ($p<.01$), $\eta^2p=.03$) and there was an increase in ratings of pig sentience across the same period ($F_{(1,12)}=4.94$ ($p<.05$), $\eta^2p=.02$). None of the other species’ sentience ratings changed significantly across the study period. As has been found in some other studies of people’s beliefs about animal sentience and animal mind (e.g. see Walker and others 2014), there was a tendency for female respondents to rate some species as having a greater capacity for sentience than did males (dogs, cats, rats, rabbits; see Table 1 below).

It is clear from these results that for the students studied here, there was not a marked decline in beliefs about animal sentience, and we conclude that diminution of sentience attributions is not an inherent feature of progress through veterinary education. Future longitudinal studies will be needed to establish whether veterinary students at other universities around the globe also show this largely stable pattern of beliefs, or whether some courses do indeed unwittingly encourage Cartesian views of animals. It is possible that there is wide variation between courses in the beliefs and attitudes that students acquire, as a result of local sub-cultures generated by peers, teaching staff and broader cultural expectations about a veterinarian’s role (e.g. see Arluke 1988). There is also likely to be variation in other factors which could also influence these processes, such as the developmental and educational backgrounds of the students concerned, including their experiences of pet and other animal species prior to entering university (e.g. Paul and Serpell 1993)

A possible explanation for our findings not confirming previous demonstrations of differences between first- and final-year veterinary students is that these earlier studies may

have simply detected cohort-based differences in sentience beliefs and were not, after all, reflecting actual changes in students' views. This is certainly possible, given that the present study found significant year-of-enrolment (cohort) effects (see Table 1 below). But it is also possible that Paul and Podberscek (2000) were detecting a genuine trend which was present in the two UK universities they surveyed in the late 1990s but which may be much less common now, thanks to the many changes that have occurred in veterinary education in recent years (e.g. see Main 2010). And another alternative is that this trend continues in some universities but not others, depending on the nature and quality of the teaching processes applied. Further research will be needed to confirm whether or not changing beliefs about animal sentience is a contemporary concern, and whether and how it might vary between educational institutions. For this, methodological considerations will be critical. First, it will be important to conduct longitudinal investigations, in which the same individuals' beliefs are sampled two or more times across their courses. And second, it will be important to sample respondents' beliefs about a wide range of animals, because educational practices and cultures may impact on species beliefs differentially. It is interesting, for example, that the students studied here actually increased their attributions of pig sentience. Perhaps some animals, such as pigs, are only poorly understood by the wider public and a veterinary education can play an important role in challenging and modifying these lay perceptions.

Table 1: Effects of stage of veterinary education (first year / final year) on veterinary students' Belief in Animal Sentience scores (n=218)

Dependent variables			ANOVA <i>F</i> –Values (df) [Effect size/ $\eta^2\rho$]		
	First year Mean BiAS score	Final Year Mean BiAS score	Stage of veterinary education (within-subjects factor)	Gender	Year of enrolment
Dogs	7.44	7.31	NS	$F(1, 212) = 6.84^*$ [.03]	NS
Cats	7.10	7.07	NS	$F(1, 212) = 9.25^{***}$ [.04]	$F(2, 12) = 3.74^*$ [.03]
Lions	6.93	6.78	NS	NS	NS
Pigs	6.68	6.86	$F(1, 12) = 4.94^*$ [.02]	NS	NS
Sheep	5.94	5.94	NS	NS	$F(2, 12) = 4.17^*$ [.04]
Rats	5.91	5.77	NS	$F(1, 212) = 4.99^*$ [.02]	NS
Rabbits	5.80	5.70	NS	$F(1, 212) = 7.51^{**}$ [.03]	$F(2, 12) = 4.46^*$ [.04]
Chickens	5.05	5.02	NS	NS	$F(2, 12) = 3.34^*$ [.03]
Bees	3.37	3.03	$F(1, 12) = 6.74^{**}$ [.03]	NS	NS
Spiders	3.07	2.86	NS	NS	NS

* $p < .05$, ** $p < .01$, *** $p < .005$, **** $p < .001$, NS Not Significant

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References

- ARLUKE, A.B. (1988). Sacrificial symbolism in animal experimentation: Object or Pet? *Anthrozoös* **2**, (2) 98-117.
- BLACKSHAW J.K. and BLACKSHAW A.W. (1993) Student perceptions of attitudes to the human-animal bond. *Anthrozoös* **6**, (3), 190-198.
- HAFFERTY, F.W. (1998) Beyond curriculum reform: Confronting medicine's hidden curriculum. *Academic Medicine* **73** (4), 403-407.
- HELLYER, P.W., FREDERICK, C., LACY, M., SALMAN, M.D. AND WAGNER, A.E. (1999) Attitudes of veterinary medical students, house officers, clinical faculty, and staff toward pain management in animals. *Journal of the American Veterinary Medical Association* **214** (2), 238-244.
- KARAFOKAS, A. (2011). Too cool to care? *Journal of the Association of Veterinary Students* (Spring), 14.
- LAWRENCE, A.E. (1997) A woman veterinary student in the fifties: The view from the approaching millennium. *Anthrozoös* **10** (4), 160-169.
- MAIN, D.C.J. (2010) Evolution of animal welfare education for veterinary students. *Journal of Veterinary Medical Education*, **37** (1), 30-35.
- PAUL, E.S. and PODBERSCEK, A.L. (2000) Veterinary education and students' attitudes towards animal welfare. *Veterinary Record* **146** (10), 269-272.
- PAUL, E.S. and SERPELL, J.A. (1993) Childhood pet keeping and human attitudes in young adulthood. *Animal Welfare* **2** (4), 321-337.
- TIPLADY, C. (2012) Animal use in veterinary education – the need for a fourth R: Respect. *Perspectives in Laboratory Animal Science* **1** (1), 5-6.
- WALKER, J.K., McGRATH, N., NILSSON, D.L., WARAN, N.K., and PHILLIPS, C.J.C. (2014) The role of gender in public perception of whether animals can experience grief and other emotions. *Anthrozoös* **27** (2), 251-266.