

Assessing attitudes toward farm animal welfare: A national survey of animal science faculty members¹

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ABSTRACT: A survey to measure attitudes toward farm animal welfare was developed. We targeted animal science faculty because of their influence on animal production in the United States. We initially interviewed 34 faculty members from a large Midwestern public university to assist with questionnaire development. After our written survey was developed, we pilot-tested our questionnaire at this same university. Thereafter, we sent an e-mail advance notice, first survey, and follow-up survey/thank-you to the national population of animal science faculty members. With an $n = 446$ (response rate = 45%), we observed the following: 51% (for layer birds), 58% (for meat birds), 66% (for swine), 84% (for dairy), 86% (for sheep), and 87% (for beef) of our respondents agreed that the predominant methods used to produce various types of animal products provided appropriate levels of animal welfare. Our findings showed that greater than 90% of respondents support general principles of animal welfare, such as keeping animals free from unnecessary fear and dis-

tress. However, specific practices that have been shown to elicit distress (e.g., castration without anesthetic) were deemed a concern by only 32% of the respondents. Various industry practices/outcomes were assessed for level of concern and varied from a high of 83% of respondents agreeing that flooring effects on lameness in intensively farmed animals are a concern, to a low of 16% agreeing that early weaning in pigs is a concern. Summed attitude scores showed significant relationships with the demographic variables of gender ($P < 0.01$) and political ideology ($P < 0.01$), with women and those holding more liberal political views being more concerned about farm animal welfare issues. Gaining an awareness of various stakeholders' attitudes (e.g., animal scientists, veterinarians, producers, and consumers) toward farm animal welfare will assist animal welfare scientists in knowing which research topics to emphasize and, perhaps, where critical gaps in accessibility of knowledge exist.

Key Words: Animal Scientists, Animal Welfare, Attitudes, Surveys

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Introduction

Animal welfare scientists have published numerous articles in peer-reviewed journals during the last few decades; however, the effect of welfare science research seems to have not yet attained its potential. We propose one possible reason for this is that some stakeholder attitudes are resistant to change relating to animal welfare.

We chose to study attitudes resulting from their relationship with behavioral intentions (i.e., how people intend to behave). Azjen and Fishbein (1980) proposed the Theory of Reasoned Action, stating that attitudes relate to intentions on how people will behave. However, external obstacles may impede the ability to act on intentions (Eagly and Chaiken, 1993). One potential obstacle may be cognitive dissonance (Festinger, 1957; Smith and Mackie, 2000). For example, if people need to act in a certain way to perform tasks but those actions do not correspond with their attitudes, they may alter their attitudes through rationalization so as to reduce dissonance (i.e., cognitive discomfort). If animal scientists need to educate **[Au: educate "whom"? Please state]** on the importance of maximizing production efficiency, while realizing this may impinge upon animal welfare, we may rationalize our position by convincing ourselves that the welfare science literature is not sound science or that consumers will not support the cost of enhancing animal welfare. Hemsworth and Cole-

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man (1998) presented a review of attitudes. Hemsworth et al. (2002) used this attitude information to develop strategies to affect livestock worker behavior.

We began exploring the idea that certain attitudes were impeding receptivity to the welfare science literature. With this possibility in mind, we decided to examine the attitudes of two influential populations in the U.S. animal agriculture industry: animal science faculty and veterinary college faculty. This paper will address the former. Our objectives were to develop and implement a survey that would assess the attitudes of U.S. animal science faculty to farm animal welfare.

Materials and Methods

Designing the Survey

Pilot Interviews. In developing our questionnaire, we initially examined other available instruments that have been used to assess attitudes toward animal welfare in other contexts (Kellert, 1980; Wells and Hepper, 1997; Paul and Podberscek, 2000). We ultimately decided to develop a new questionnaire, primarily because of the lack of specificity in these other studies toward production animal issues. Thirty-four out of 49 animal science faculty members at a Midwestern university (69%) agreed to be interviewed (approximately 30 min) to refine a pilot questionnaire. These interviews were conducted during the fall semester of 2002. Interviewees were asked to examine the pilot questionnaire and assess it for the following: ease of readability and comprehension, whether it presented a balanced viewpoint for this rather sensitive topic, and whether it was missing critical elements. After approximately every five interviews, a new version of the questionnaire was made.

Pilot Testing of the Written Questionnaire. Once a final version had been developed, the attitude questionnaire was sent by e-mail to all members of this Midwestern animal science department. An advance notice was sent, and was followed several days later by a cover letter with the questionnaire as a Microsoft Word attachment. This was followed 1 wk later by a thank-you/reminder with another questionnaire attached. In general, Dillman's (2000) Internet survey methodology was followed.

Thirty-one questionnaires were returned, for a response rate of 63%. Based on feedback from this survey, additional modifications to our attitude questionnaire were made. One modification that was made in this process was to omit horses and aquaculture from the questionnaire, as it seemed too few people had a working familiarity with these areas to provide meaningful data. This set of responses also served as a standard by which to compare the responses garnered from the national population. Sample questions from our final survey are included within this article. A full copy of the attitude assessment questionnaire may be obtained from the authors.

The National Animal Science Population

A complete listing of U.S. animal science faculty members was compiled in the following manner. Three listings of U.S. animal science organizations were reviewed (<http://www.ansi.okstate.edu/library/dairy/univ.htm>, <http://ag.ansc.purdue.edu/poultry/university.htm>, and <http://www.fass.org/memdir/>). Fifty-eight departmental websites were then investigated for e-mail directories of their respective faculty members. A total of 1,466 people comprised the final e-mail listing. Four hundred forty-six responses were ultimately received. Once undeliverables and inappropriate targets were removed from the original listing, this represented a response rate of 45%. When doing survey research, one needs to be concerned with whether the respondents appropriately represent the population of interest (Babbie, 1990). We believe that our respondents appropriately represent the greater animal science faculty population for the following reasons: 1) these national responses closely mirrored our pilot sample results (which had a 63% response rate), 2) there was diversity in the universities that respondents reported as having heavily influenced their belief system, 3) there was diversity in the states that respondents reported as representing where they had spent the greatest portion of their lives, and 4) when asked to make a self-rating of their attitudes toward farm animal welfare, those who chose scale options expressing a greater-than-"typical" level of concern were nearly equal in number to those who chose a lesser-than-"typical" level of concern. The diverse responses increased our confidence that we had a representative response. We had initially been concerned that we might primarily get responses from those most empathetic to animal welfare concerns.

The Internet survey procedure was similar to that used above: advance notice, followed 2 to 4 d later by a cover letter along with the questionnaire, followed 1 wk later by a thank-you/reminder with a second questionnaire. One notable difference was employed between the pilot testing and the national surveying. In the pilot testing, a Microsoft Word attachment was used so that bolding and italicizing could be used. In the national survey process, we decided that because people might not be familiar with the sender's name, an embedded text message would more likely be opened than would an attachment, from an unknown source. Respondents had the option of returning the survey via e-mail or printing the response and returning via postal mail.

Questionnaire

The final version of the seven-page questionnaire consisted of 52 quantitative (closed-ended) questions, 1 qualitative (open-ended) question, and space for points of clarification. Questions chosen represented the following information categories: 6 questions pertained to whether respondents felt that the predominant meth-

ods currently used to produce animal products provide an appropriate level of animal welfare in the beef, dairy, layer chicken, meat bird, sheep, and swine industries; 11 questions pertained to various aspects of the Five Freedoms (described in the Results and Discussion section); 4 questions related to specific beliefs (e.g., agricultural animals have individual temperaments); 6 questions pertained to whether respondents felt no welfare-related changes, minor changes, or substantial changes were needed for each of the livestock production systems; 15 questions asked respondents to indicate their level of agreement/disagreement with various husbandry practices that animal science students had cited as concerns in an earlier survey (e.g., levels of lameness in dairy cattle); 4 questions related to behavioral intentions (e.g., as a consumer, I would be willing to pay slightly more for products coming from facilities that are enhancing welfare beyond current industry-common levels); 4 questions asked respondents to prioritize how much time and money should go toward animal welfare, environmental issues, sustainable agriculture and food safety; 1 open-ended question asked respondents to identify obstacles to implementing welfare-related changes if they felt any were needed; 1 question asked respondents to self-assess their attitude on a 7-point scale with one anchor being a strong animal rights position and the opposite anchor being a strong utilitarian position; and 13 demographic questions. The majority of the questions could be answered with a typical Likert scale: strongly agree, agree, neutral/unsure, disagree, or strongly disagree (Mueller, 1986). To facilitate χ^2 analyses and ensure a sufficient number of respondents per cell, strongly agree and agree were combined and strongly disagree and disagree were combined (Figures 1 and 3). Some questions allowed the option of “not familiar enough” with the species or practice being asked about.

Data Handling

Data analysis was conducted using SPSS (Version 11.5; SPSS, Chicago, IL), which was used for frequency counts, descriptive statistics, comparisons of means, correlations, χ^2 testing, summation of attitude scores into a scale score, factor analysis, and reliability analysis. Where Bernoulli proportions were conducted (Lindgren, 1976), question responses were first ranked from highest percentage of respondents to lowest, and then the proportion for each situation was compared with that of the next highest proportion on the list. Pairwise Z-test statistics were then used to compare the proportions within each group.

To calculate the total attitude score for each respondent, we added the following together: the production method responses, the values responses that related to the Five Freedoms, the belief statement responses, the husbandry practices responses, and the behavioral intention responses. The relationship of gender with attitude score was assessed with a comparison of means,

Table 1. Demographic information from our national animal science respondents

Demographic category	Percentage of respondents
Response mode, n = 445	
E-mail	89%
Postal	11%
Gender, n = 437	
Male	83%
Female	17%
Ethnicity, n = 433	
White	96%
Nonwhite	4%
Age, n = 415	
60 yr or older	25%
52 to 59 yr	25%
45 to 51 yr	25%
26 to 44 yr	25%
Species emphasis (listed >1), n = 418	
Beef	44%
Dairy	33%
Swine	25%
Poultry	16%
Sheep	14%
Horse	13%
Political ideology, n = 427	
Primarily liberal	8%
Somewhat liberal	12%
Moderate	26%
Somewhat conservative	27%
Primarily conservative	26%
Do not know	2%
Religiosity, n = 431	
Very religious/spiritual	34%
Moderately religious/spiritual	37%
Somewhat religious/spiritual	13%
Slightly religious/spiritual	7%
Not at all religious/spiritual	9%
Area where greatest % of life spent, n = 432	
Greater Midwest	27%
Greater New England/Northeast	15%
South/Gulf states region	15%
Central Southwest region	12%
Midatlantic/East Central region	10%
Central Plains/Mountains/Desert region	9%
West Coast	7%
Country outside of the U.S.	5%

as was the relationship between species emphasis area with attitude score. The relationships between political views and attitude score, pet ownership with attitude score, and age with attitude score were assessed with Pearson's correlation.

Factor analysis revealed that the overall attitude scale was unidimensional. Cronbach's alpha ($\alpha = 0.78$) of the scale items also revealed a high degree of internal consistency. None of the questions, after deletion, caused the alpha to increase.

Results and Discussion

Demographic information is cited in Table 1. The high proportions of male respondents and white respondents seem to accurately reflect the general population of ani-

mal scientists. We base this on perceptions acquired while assembling the e-mail database from departmental websites, as well as on a comparison with our pilot respondents. Nonetheless, we were unable to obtain definitive data describing the demographic make-up of the general animal science faculty population.

Respondents were asked to identify their species emphasis area. This was an open-ended question, and respondents could choose as many species emphases as they wished. Four hundred and four respondents cited one or more species emphasis area with the following results: 44% listed beef; 33% listed dairy; 25% listed swine; 16% listed poultry; 14% listed sheep; and 13% listed horses. Other species listed were goats, laboratory animals, fish, llamas, and humans. Because this was a “free” listing; i.e., there was not a list of options that happened to list beef first, we are not sure why the beef emphasis was present at a higher level than we suspect is true of the general population of animal scientists. Many of those listing beef also listed other species as well, so it may be a very common secondary interest for animal scientists. There is also the possibility that faculty with a beef background felt more comfortable responding to this questionnaire, though this would warrant more study.

Attitudes Toward Current Farm Animal Production Methods

Respondents were asked to identify whether they felt the predominant methods that are currently used to produce animal products provide an appropriate level of animal welfare in each of the following species: beef cattle, dairy cattle, layer chickens, meat birds, sheep, and swine. Results are shown in Figure 1. In each species, over 50% of the respondents agreed or strongly agreed that the predominant methods currently used provide appropriate levels of animal welfare.

Values Related to Various Aspects of Farm Animal Welfare

The second subset of questions related to values as they pertain to what are classically referred to as the “Five Freedoms” (U.K. Farm Animal Welfare Council, as cited in *Farm Animal Welfare*, edited by Appleby and Hughes [1997]). They were very subtly modified, in response to feedback from the pilot interviews, and several additions were made, again based on feedback from the pilot survey. The original U.K. Farm Animal Welfare Council (2004) wording is as follows. “1) Freedom from hunger and thirst—by ready access to fresh water and a diet to maintain full health and vigour; 2) freedom from discomfort—by providing an appropriate environment including shelter and a comfortable resting area. 3) freedom from pain, injury, or disease—by prevention or rapid diagnosis and treatment; 4) freedom to express normal behaviour—by providing sufficient space, proper facilities, and company of the ani-

mal’s own kind; 5) freedom from fear and distress—by ensuring conditions and treatment which avoid mental suffering.”

In general, the abstract presentation of these fundamental animal care values was met with a high degree of agreement; seven statements had over 90% agreement by the respondents. However, there were several noteworthy exceptions: 53% of respondents agreed/strongly agreed with the statement “agricultural animals should have room to move around freely,” 61% agreed/strongly agreed with the statement “agricultural animals should have freedom to express a majority of their normal behavioral repertoire,” and 84% agreed/strongly agreed with “agricultural animals should be able to lie down on a comfortable substrate” (Table 2).

Belief Statements Related to Farm Animal Welfare

Respondents were asked to express their agreement with certain belief statements. Ninety-two percent of respondents agreed or strongly agreed with the statement “agricultural animals have individual temperaments.” Sixty-one percent of respondents agreed or strongly agreed with the statement “agricultural animals can experience something akin to boredom.” Related work on whether domestic animals have “minds” and “the ability to think” has been done by Davis and Cheeke (1998), who found that 17% of the animal science faculty they surveyed said, “no, animals do not have minds” and “no, they do not have the ability to think.”

Forty-eight percent of respondents agreed or strongly agreed with the statement “it is important to meet the majority of behavioral needs possessed by agricultural animals (behavioral needs are defined in this survey as those behaviors animals have evolved to perform and are highly motivated to engage in).” Another question in this segment was “if animals are producing (i.e., gaining weight, producing eggs, etc.), that means they have good welfare.” Fifty-one percent of the respondents agreed/strongly agreed with this statement.

Perceptions Related to Whether Welfare-Related Changes Are Needed

Respondents were asked whether they felt that welfare-related changes are needed in our current production systems by species. Respondents could answer that they felt no changes are needed, minor changes are needed, or substantial changes are needed. Results are presented in Figure 2.

Concerns Based on Earlier Student Survey

A previous survey of animal science students preparing for a national Animal Welfare Judging competition (Heleski et al., 2003) revealed 15 animal production practices/outcomes that students saw as concerns. We asked the animal scientists whether they agreed or

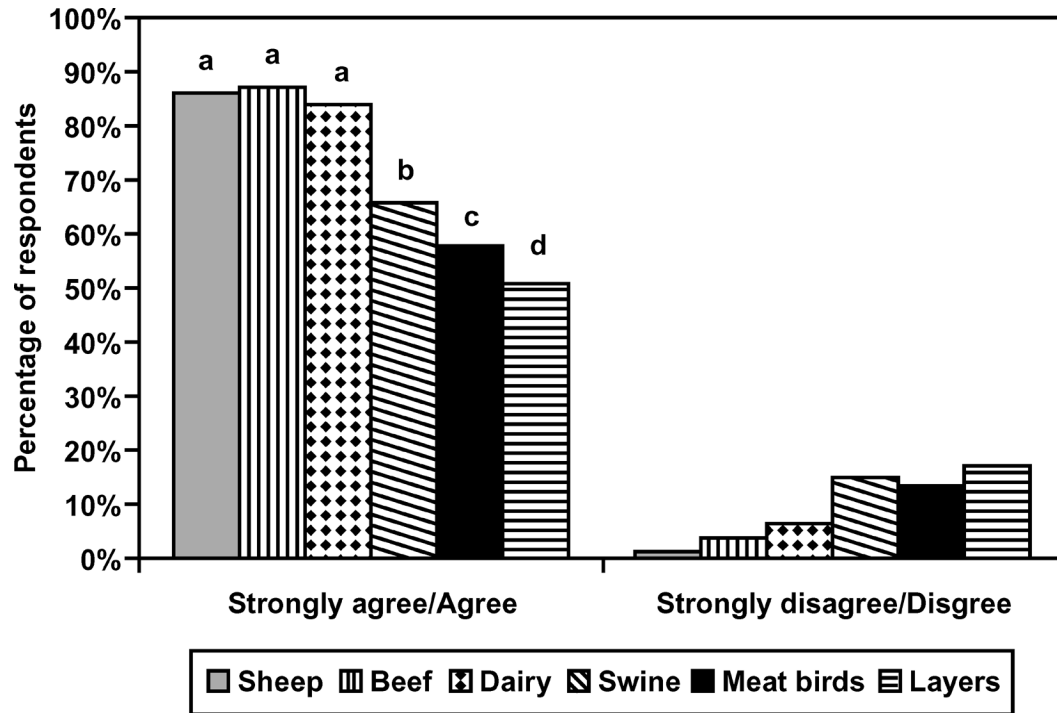


Figure 1. The percentages of animal science faculty agreeing and disagreeing with the following statement for each species: “The predominant methods that are currently used to produce animal products provide an appropriate level of animal welfare in the ____ industry.” Some combinations do not add up to 100% because the neutral/unsure category has been omitted from this graph. The percentages of strongly agree/agree responses for each species were ranked from highest to lowest and treated as Bernoulli proportions (Lindgren, 1976). The Bernoulli proportion was compared for each situation to that of the next highest proportion using pairwise Z-test statistics. “a” differed from “b” ($P < 0.001$); “b” differed from “c” ($P = 0.009$); “c” differed from “d” ($P = 0.021$). Bars with the same letter do not differ.

Table 2. Percentage of animal science faculty agreeing or strongly agreeing with value statements relating to the husbandry of farm animals (percentages of strongly agree/agree responses for each statement were ranked from the highest proportion of agreement to the lowest proportion)

Statement	Percentage of respondents agreeing/strongly agreeing	No. of respondents
Agricultural animals should have freedom from thirst most of the time.	98%	444
Agricultural animals should have freedom from injury and disease (or prompt treatment should they arise).	98%	443
Agricultural animals should have freedom from unnecessary pain and/or discomfort.	97%	441
Agricultural animals should have sufficient area to lie down.	94%	441
Agricultural animals should have calm handling during “processing” and transportation situations.	93%	444
Agricultural animals should have freedom from hunger most of the time.	92%	444
Agricultural animals should have freedom from unnecessary fear and/or distress.	89%	440
Agricultural animals should be able to lie down on a comfortable substrate.	84%	441
Agricultural animals should have freedom to express a majority of their normal behavioral repertoire.	61%	439
Agricultural animals should have room to move around freely.	53%	439

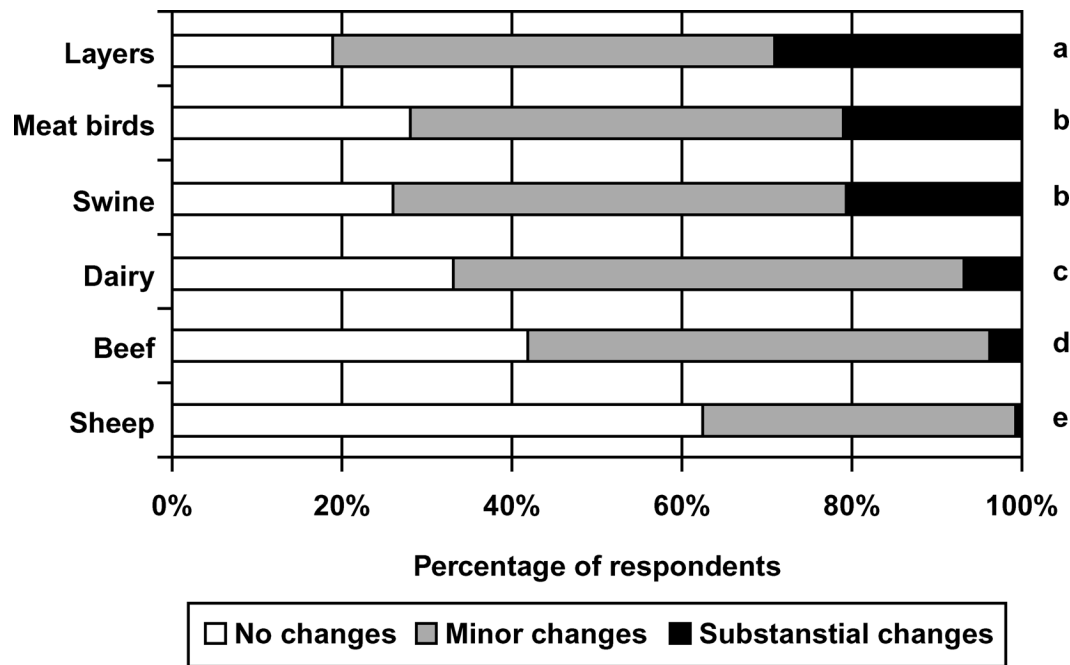


Figure 2. The percentages of animal science faculty that felt no changes, minor changes, or substantial welfare-related changes were needed in each of the various production systems. Respondents choosing “not familiar enough with species to form an opinion” were not included in this figure. Proportions were ranked on the “substantial changes” basis and treated as Bernoulli proportions (Lindgren, 1976). The Bernoulli proportion for each situation was compared with that of the next highest proportion using pairwise Z-test statistics. “a” differed from “b” ($P = 0.005$); “b” differed from “c” ($P < 0.001$); “c” differed from “d” ($P = 0.022$); and “d” differed from “e” ($P < 0.001$). Bars with the same letter do not differ.

disagreed that these items were concerns. In this question, respondents had the option of choosing “Not familiar enough with practice to form an opinion.” Respondents choosing the “Not familiar enough” option ranged from 2% of the respondents (e.g., castration without anesthetic) to a high of 29% for toe trimming in poultry. See Figure 3 for a detailed breakdown of the results to this question.

It seems that issues viewed as more chronic situations (e.g., cage space for layers) or as production effects (e.g., lameness in dairy cattle) are rated as higher level concerns. However, several notable exceptions within the swine industry warrant further research. We further went on to examine these practices on a species-by-species basis. For example, we evaluated toe trimming and beak trimming based on responses from those with a poultry emphasis and compared them with responses from those not having a poultry background. In this case, the species background difference was significant ($P < 0.05$), with poultry respondents rating these two practices less a concern than respondents not having a poultry background. Swine respondents rated the early weaning of pigs and use of gestation crates for sows as less a concern than respondents lacking such background ($P < 0.01$). Conversely, there was a tendency for dairy respondents to rate lameness in dairy cattle as a higher concern than respondents without a dairy emphasis ($P < 0.10$).

Intentions Involving a “Cost” Related to Farm Animal Welfare

When asked to agree/disagree with the statement “animal welfare should be enhanced only if it can be done without increasing costs of production,” a substantial proportion of the respondents (69%) disagreed or strongly disagreed with this statement. We then asked for a projected behavior response to the following: “As a consumer, I would be willing to pay slightly more for products coming from facilities that are enhancing welfare beyond current industry-common levels.” Forty percent agreed/strongly agreed, 44% disagreed/strongly disagreed and 16% were neutral or unsure.

We did not conduct a contingent valuation of what margin people would be prepared to pay. Based on the work of Bennett (1998), adding the necessary questions to conduct an appropriate contingent valuation would have added a large number of questions to our survey. We decided that it would best be handled in a future survey if warranted.

In our experience working with students preparing for animal welfare judging competitions (our unpublished observations), one area they seem keen to improve is the pain relief via an anesthetic and/or analgesic approach to dealing with acute interventions, such as dehorning, castration, and beak trimming. However, our current data do not show strong faculty support for

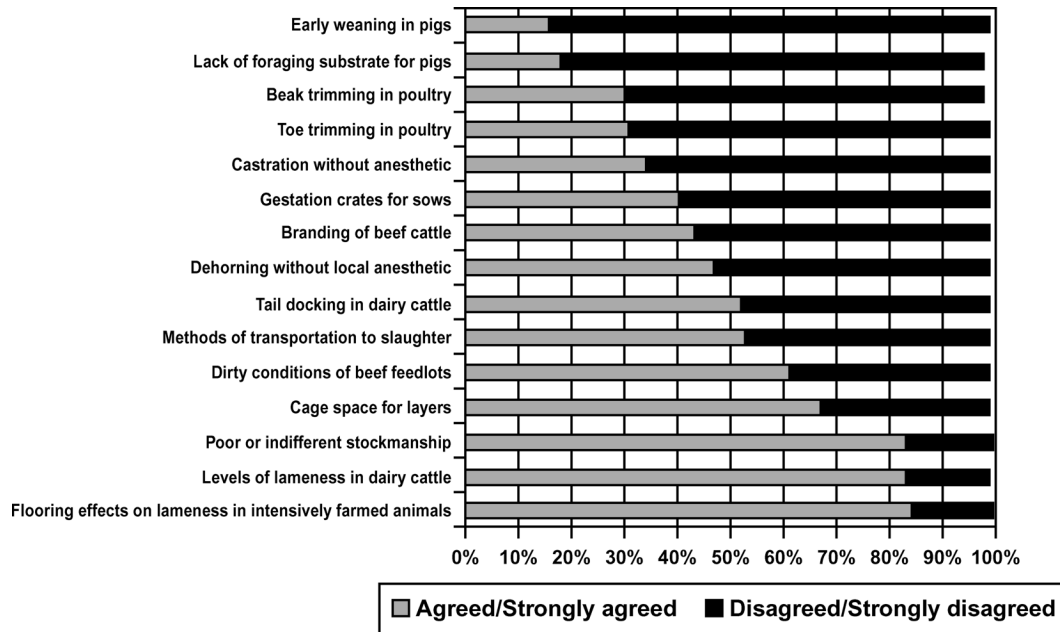


Figure 3. Percentage of animal science faculty members agreeing and disagreeing with whether the practices/outcomes that are listed warrant concern. These concerns were revealed during an earlier survey of animal science undergraduate students. For clarity purposes, those not familiar enough with a given practice to form an opinion were not included in this graph.

following up on this concern with further research. Only 34% agreed/strongly agreed with the statement “acute interventions that cause pain (e.g., castration) should be performed under local anesthesia (or general, if animal’s age suggests that).” Frequent clarifiers written to support respondents’ answers were responses such as, “How do we know the animal is experiencing pain?” “It is too time consuming to administer anesthetic or analgesic on any sort of routine basis,” “The consuming public will never support the costs of these procedures.” However, the welfare science literature offers substantial supporting evidence that many of these procedures elicit multiple indicators of pain (e.g., dehorning in cattle, Graf and Senn, 1999; piglet castration, Taylor and Weary, 2000; lamb castration and tail docking, Molony et al., 2002). These studies have shown not just one questionable indicator, but several, such as increased cortisol, decreased gain, increased vocalizations, along with increased and abnormal body postures, such as kicking and foot stamping. There seems a tendency to dismiss these findings. However, another possibility exists: perhaps the welfare scientists and applied ethologists have not sufficiently provided information to the typical industry stakeholder so that they might be aware of the current body of research literature. Perhaps a critical gap exists between welfare science research findings and information dissemination to industry stakeholders. Another alternative explanation exists: that respondents place a different weight on chronic situations (e.g., lameness) vs. acute situations (e.g., castration without anesthetic). Interviews of re-

spondents would be an interesting way of clarifying this point.

Prioritizing Resources for Critical Contemporary Issues

The pilot respondents frequently brought up the idea that, whereas animal welfare might be viewed as important when compared with other serious contemporary topics—such as environmental issues, especially as they relate to manure management, sustainable agriculture, and food safety—animal welfare might be considered somewhat less important. Subsequently, we decided to assess this matter in the national population. We asked respondents, “in terms of prioritizing animal science resources (whether research dollars, time spent teaching, or number of outreach programs), how would you prioritize the following topic areas?” Respondents could rank items as high, medium, or low priority; Figure 4 depicts the results. In general, food safety and environmental issues were seen as very high priorities, whereas animal welfare and sustainable agriculture were seen as lower priorities.

Relationships with Various Demographic Variables

In terms of total attitude score (where scores from each of the above question category subscales were added together, with higher numbers reflecting greater concern for farm animal welfare), several relationships were significant. There was a relationship between gender and total attitude score ($P < 0.01$) in that females,

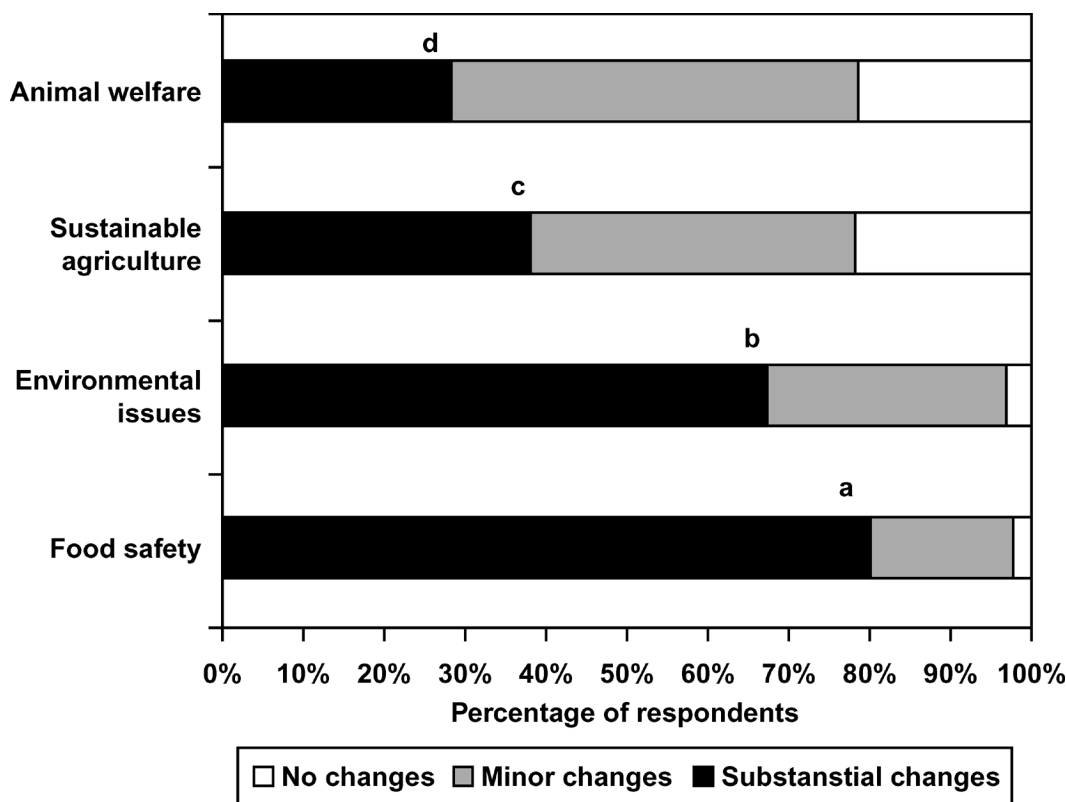


Figure 4. Percentage of animal science faculty responding with “high,” “medium,” or “low” in reference to the following question: “In terms of prioritizing animal science resources (whether research dollars, time spent teaching, or number of outreach programs), how would you prioritize the following topic areas—high priority, medium priority, or low priority?” Respondents were not limited in the number of times they could choose a response. The percentages of “high priority” responses from highest to lowest were ranked and treated them as Bernoulli proportions (Lindgren, 1976). The Bernoulli proportion was compared with that of the next highest response category using pairwise Z-test statistics. “a” differed from “b” ($P < 0.001$); “b” differed from “c” ($P < 0.001$); and “c” differed from “d” ($P = 0.001$).

on average, had higher total attitude scores, which we might also call empathy for agricultural animal welfare. Similar findings of females being more empathetic toward animal issues have been found by Pifer et al. (1994), Wells and Hepper (1997), and Paul and Podberscek (2000).

Furthermore, there was a relationship between political affiliation and total attitude score ($P < 0.01$), in that higher total attitude scores were correlated with liberal viewpoints. This finding has also been noted in the field of concern for the environment (Dunlap et al., 2000). There was a negative correlation between a higher sense of religiosity and total attitude scores ($P < 0.05$), with those scoring lower in terms of religiosity being more concerned with farm animal welfare. The relationship between religiosity and concern for farm animal welfare may seem counterintuitive. It would seem as if people who view themselves as more highly religious should want to be especially good stewards of animals; however, one study that delved into this more thoroughly (Bowd and Bowd, 1989) found that more conservatively religious people had less positive (less humane) attitudes toward animal treatment than did more liberally religious (or less religious) people. The religiosity

debate between a “dominion over the animals” approach to animal treatment vs. a “steward of the animals” approach to animal treatment is further expanded on in Preece and Fraser (2000).

We did not find a significant relationship between age and attitude score ($P > 0.05$) [**Au: If possible, use the exact *P*-value here**]. We did not find a significant relationship between their total attitude score and whether people considered having a pet to be important. This was asked both from the standpoint of childhood pet ownership, as well as current adult pet ownership, and neither situation showed a significant relationship. This was surprising in light of other work (Paul, 2000), but may reflect the notion that people view their relationship with pets very differently than they view their relationship with farm animals.

Implications

Our attitude survey proved insightful with this population of animal science faculty members. We see the results as demonstrating that when presented with information in an abstract way, animal scientists reflect a high degree of concern for farm animal welfare. How-

ever, when presented with specific circumstances that they may have engaged in or taught about, the concern was, in many cases, considerably lower. We propose that rationalization may have taken place to help protect respondents from the unpleasant feelings associated with cognitive dissonance. This hypothesis warrants further research to substantiate or refute it. Ultimately, attitudes should be assessed and understood before effective intervention strategies can be designed to moderate certain attitudes. We believe that an enhanced understanding of stakeholder attitudes toward farm animal welfare will assist with formulating strategies aimed at enhancing acceptance and implementation of welfare science literature that has passed scientific scrutiny.

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