Student Perceptions of Animal Use in Society

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Abstract

The purpose of this study was to determine the demographic characteristics that affect students' attitudes regarding animal use. Incoming freshman (n = 136) completed a 20-question survey (Likert scale 1–5; range 20–100, summed and reported as a composite score) regarding perceptions of animal use, rights and welfare. Composite scores (CS) ranged from 54.8 to 81. Lower scores were consistent with animal rights positions and higher scores corresponded with animal use values. Composite scores were examined for correlation to varied student demographics. Major ($P < 0.01$); career objective ($P < 0.01$), geographical region ($P < 0.05$) and history of animal ownership ($P < 0.01$) significantly affected CS. Livestock science majors (70.1 ± 1.1) scored higher than either equine (57.7 ± 1.3) or horticulture majors (57.9 ± 1.4). Students with livestock production career objectives scored higher (69.5 ± 1.6) than students interested in either equine production (61.5 ± 2.5) or veterinary medicine (61.2 ± 1.6). Commercial livestock ownership, reported by 39.9% of students, dramatically increased ($P < 0.01$) CS compared with students reporting equine, pet or no animal ownership. As part of the survey, students were asked if they perceived a difference between animal rights and welfare. Gender ($P < 0.05$), age ($P < 0.05$) and home residence ($P < 0.01$) all significantly influenced responses. Males, non-traditional students (age >21) and urban dwellers were less likely to differentiate between animal rights and welfare than females, 17–20 year olds and students from non-urban backgrounds. This study indicates most students CS are consistent with supporting animal welfare and use.

Introduction

Historically in the United States, animal welfare involved those activities that provided adequate water, food and shelter to animals in a pain and stress free environment. Recently, there have been numerous studies that expand the definition of adequate welfare to include husbandry conditions that insure species-typical behaviors, species-typical social interactions and the ability to adapt and cope with their environment (Swanson, 1995; Miranda-de la Lamal, et al 2010; Morrison, et al 2006; Rose-Meierhofer, et al. 2010; Shimmura, et al 2010). Political animal activism has become widespread, often challenging current livestock and non-livestock animal husbandry practices and in some instances has resulted in legislative changes designed to regulate animal welfare. Current social, political and economic environments contribute to the divergent views of animal use in our society. Recent studies have examined factors that influence attitudes towards animal rights and welfare. Demographic factors, such as gender (Heleski, et al 2004; Paul and Podberscek, 2000) and residence (Kelbert and Berry, 1980; Reading, et al 1999) have been shown to influence attitudes. Additionally, Smith and Mackie (2000) attribute cognitive dissonance as a psychological mechanism that individuals use to alter attitudes to match behaviors. Speciesism, the discrimination or differences in values based solely on species, increases the complexity of understanding and predicting individual's and society's attitudes towards animals (Serpell, 2004, Taylor and Signal, 2009). The objective of this study was to characterize general attitudes on animal use by society in freshmen undergraduates and correlate general attitudes with demographic parameters.

Materials and Methods

Questionnaire

A review of several previous survey instruments was conducted. The survey instrument designed by Davey (2006) was selected, due to its brevity, ease of administration and was modified for use in this study. Briefly the survey consisted of 20 questions designed to measure students' attitudes toward the use of animals in society, Figure 1. Animal use topic questions included: food and production methods (n = 4), sport (n = 3), medical use (n = 3), transportation (n = 1), fur (n = 1), threats or pest (n = 1), companion animals (n = 3) and general animal rights (n = 4). Modifications included slight wording changes as well as replacing 5 topics from the Davey survey instrument with questions that reflected United States agriculture, Ohio culture and current animal welfare issues. Each question was scored on a 1-5 Likert scale using descriptors such as 1 = strongly dis-

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agree to 5 strong agree. Seven questions were reverse scored so that they consistently reflected the same attitude at the extreme ends of the Likert scale. This created a scoring system that could range from 20, reflecting individuals with extreme animal right views, to 100, reflecting individuals with extreme animal use and anthropocentric views. Twelve demographic questions were included as part of the survey instrument. These included: gender, age, income, residence type, state of residence, major, career goal, previous animal ownership and involvement in agricultural, community and animal service organizations.

Figure 1. Survey instrument designed to determine student perceptions of animal use and corresponding average Likert scores.

1. Fencing in animals, even domesticated ones, is inhumane.	4.21
2. The production of inexpensive meat, eggs, and dairy products justifies maintaining animals in intensive confinement facilities, i.e. caged layers, gestation crates etc.	2.71
3. redatory carnivores (such as bears, wolves) that threaten humans or livestock should be eliminated.	2.4
4. There is nothing morally wrong with hunting wild animals for food.	4.35
5. Breeding animals for their skins or trapping wild animals for their skins is a legitimate use of animals.	2.67
6. It is acceptable to keep downer animals (animals that cannot stand) if there is a marginal chance of a full recovery.	3.04
7. It is acceptable for humans to practice speciesism (the discrimination between animals based on species), i.e. the value of the life of one animal is worth more than that of another.	2.46
8. The Amish community should be able to use their horses for draft and transportation.	4.19
9. It is morally wrong to hunt wild animals just for sport.	3.38
10. It is acceptable to keep the family dog chained in the back yard alone.	2.57
11. Testing the safety of cosmetics on rabbits is unnecessary and should be stopped.	2.41
12. There should be extremely stiff penalties, including jail sentences, for people who participate in cock- or dog-fighting.	1.58
13. It is unethical to breed purebred dogs for pets when millions of dogs are killed in animal shelters yearly.	3.19
14. It is acceptable to raise genetically engineered animals for xenographic organ/tissue transplantation (i.e. organ/tissue transplants from pigs to humans).	3.2
15. It is acceptable for humans to manage sustainable wild animal populations rather than allowing survival of the fittest.	3.43
16. Continued research with animals will be necessary if we are to ever conquer diseases such as cancer, heart disease, and AIDS.	3.54
17. It is wrong to construct fences that interfere with the natural migratory patterns of animals such as elk, deer etc.	2.9
18. Mandatory spay – neuter laws for companion animals are unethical.	2.46
19. I think people who object to raising animals for meat are too sentimental.	3.48
20. It is morally wrong to own animals.	4.9

Participants and Procedures

The Institute Research Board approved our survey and we obtained instructor permission to administer the questionnaire to students enrolled in four introductory classes at Ohio State University ATI, Wooster, Ohio in August, 2011. Inclusionary courses were Introduction to Horse Science, Introduction to Animal Science, Commercial and Floral Design, Exploring Horticulture and Introduction to Turfgrass Management representing students with equine (n = 40), livestock (n = 58) and horticulture (n = 38) interests. On the testing date, the survey proctor went to each classroom and gave a brief description of the survey, emphasizing that participation was voluntary and answers were confidential.

Analysis

Data were entered into an Excel® spreadsheet. Data from reverse scored questions were entered on the spread sheet as it's numerical opposite (ex. Likert score of 1 was entered as a 5) and composite scores were calculated as the sum of Likert scores for questions 1-20. Correlation analysis (Pearson) was performed between demographic main effects (gender, region, income, major, career objectives, animal ownership and involvement in agricultural, community and service groups) and composite score using least square means. Chi-Square tests were used to analyze the differences between 'yes' or 'no' answers to the question, "Is there a difference between animal rights and animal welfare' and the main, independent demographic values?" Significance was reported at $p < 0.05$ and trends were reported at $p < 0.10$ level. All statistics were performed using Mixed Model SAS (SAS Institute, 2002).

Results and Discussion

Demographic information indicated that females comprised 61.8% of survey participants compared to 38.2% male. In-state residents (Ohio) predominated, accounting for 94% of those surveyed compared to only 6% of out-of-state students. More in-state students were from the northeast region of Ohio (48.8%) compared to the northwest (18.25%), southeast (18.25%) and southwest (14.29%) regions. The larger number of students from the northeast is most likely attributable to the presence of several larger metropolitan areas (Cleveland and Akron-Canton) as well as being the region in closest proximity to campus. Also, as expected in introductory courses, 54.4% and 29.4% of the students were 17-18 and 19-20 years of age respectively. Only 6.5% of the participants were over 25 years of age. The primary reported residence type was farm (41.9%) followed by rural, non-farm (25.7%), suburban (16.9%) and urban (15.5%).

The most common major among survey participants was livestock science/livestock production (39.39%), followed by equine science/horse production (28.03%) and horticulture science (24.24%). Agricultural engineering, business, crop production, pre-veterinary science and undecided majors made up the remaining 8.34%. Within the animal related majors, 40.66% indicated pre-veterinarian/veterinary career ambitions, 37.36% indicated that they were planning on going into animal production or management fields, 16.48% specifically indicated equine production while only 4.4% reported a science or research interest. Somewhat surprisingly, 19.63% of the students surveyed reported household incomes less than $30,000 per year. Annual household incomes between $50,000-75,000 were the most common (29.91%) while incomes between $30,000-50,000 and $75,000-100,000 were reported 20.56 and 21.5% of the time respectively. The vast majority (72.06%) of surveyed students reported that

Table 1. Frequency distribution of animal ownership and corresponding animal use survey composite score. Letters indicate statistically significant differences (p < 0.01).

Animal Ownership	Percent of surveyed population	Composite Score (Possible range 20-100)
Pet (traditional or non-traditional)	33.33	58.77
All (commercial livestock, show livestock, horse, pet)	17.04	67.50
Pet, Show livestock, Commercial livestock	14.81	65.55
Pet, Horse	11.11	54.85
Pet, Horse, Show livestock	9.63	66.15
Pet, Show livestock	4.44	60.67
Pet, Horse, Commercial livestock	2.97	62.50
Pet, Commercial livestock	2.22	74.00
Show livestock, Commercial livestock	2.22	72.67
None	1.48	60.50
Commercial livestock	0.75	81.00
	Total 100.00	Mean Average 62.77
Commercial Livestock Ownership		
Animal Ownership including commercial livestock	40.01	67.29[a]
Animal Ownership excluding commercial livestock	59.99	59.72[b]

they had been involved in an agricultural related group or organization while 89.71% reported past involvement in community service, however, only 41.18% surveyed had been involved in community service involving animals (ex. humane society). The vast majority of students surveyed reported current or previous animal ownership. Only 1.48% of those surveyed had never owned an animal. Table 1 depicts the frequency, type of animal ownership and composite score based on animal ownership.

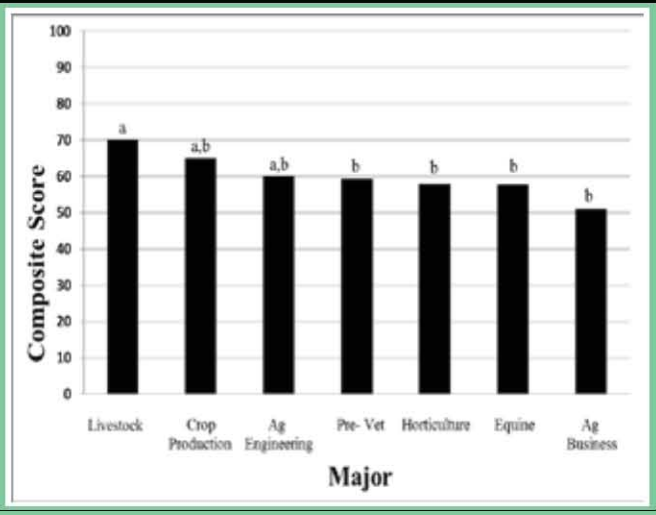
Composite scores (CS), the sum of Likert scored questions 1-20, ranged from 54.8 to 81 with an overall survey average of 62.77. Composite scores were examined for correlation to student demographics. Major ($P < 0.01$); career objective ($P < 0.01$); region of Ohio ($P < 0.05$) and history of animal ownership ($P < 0.01$) were significantly correlated with CS. Livestock science majors (70.1 + 1.1) scored statistically higher (than either equine (57.7 + 1.3, $P < 0.01$) or horticulture majors (57.9 + 1.4, $P < 0.01$) Figure 2. Similarly, students that indicated they had animal production career objectives scored higher (69.5 + 1.6, $P < 0.01$) than students interested in either equine production (61.5 + 2.5) or veterinary medicine (61.2 + 1.6), but no differences were observed between other paired career contrasts. Animal ownership (commercial livestock, show livestock, equine, pets and all possible combinations) was analyzed and significantly effected CS. Commercial livestock ownership, reported by 39.9% of students, dramatically increased ($P < 0.01$) CS compared with students reporting equine, pet or no animal ownership. Of the 68 comparisons between the combinations of reported animal ownership, there were 14 comparisons that had significantly higher CS ($P < 0.05$) and they all involved some combination that included commercial livestock. Additionally, students from NE Ohio had lower CS than students from SE Ohio, likely due to the increased urban population of the region. Composite scores were higher ($P < 0.01$) for students that reported involvement in agricultural organizations (64.9 vs. 57.1) and community service ($P < 0.01$; 63.6 vs. 55.6) compared to those who had not participated in these activities. In contrast, CS were lower ($P < 0.05$) in the group of students that reported involvement in animal service groups (60.1) compared to those not involved (64.9), perhaps reflecting a higher level of empathy towards animals due to their past experiences. Surprisingly, income and age were the only demographic characteristics that did not appear to show any correlation with CS.

As part of the survey, students were asked if they perceived a difference between animal rights and welfare, Figure 3. Gender ($P < 0.05$), age ($P < 0.05$) and home residence ($P < 0.01$) all significantly influenced responses. Males, non-traditional students (age >21) and urban dwellers were less likely to differentiate between animal rights and welfare compared to females, 17–20 year olds and students from non-urban backgrounds (farm, rural, suburban), respectively. There was a trend ($p = 0.10$) for students from households reporting annual income less than $30,000 to be less likely to recognize a difference between rights and welfare.

The demographic characteristics that influenced CS in our study paralleled findings from other researchers. Numerous studies have revealed that females appear to be more empathetic and consistently score higher on 'animal attitude' surveys than their male counterparts (Hazel et al., 2011; Taylor and Signal, 2009; Herzog, 2007; Heleski et al., 2005). Similar to our study, Hazel and associates (2011) reported lower animal attitude scores in students that expressed career choices in the livestock industry. These differences in animal attitude scores may be influenced by a variety of factors including: values; norms; knowledge; and economic, social and moral interests (Te Velde, et al., 2002).

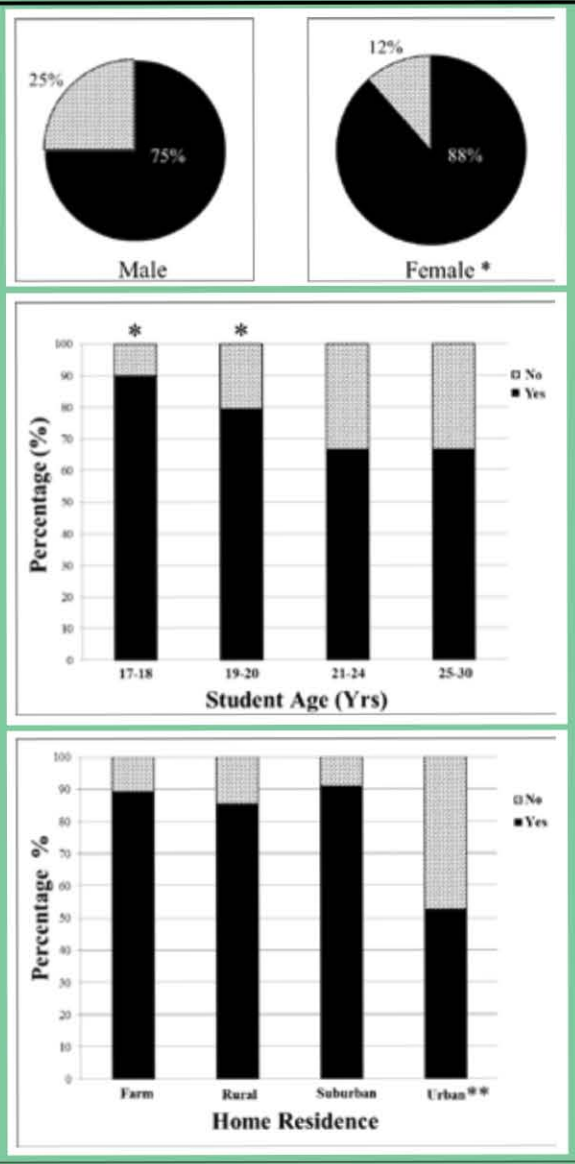
The intensification of animal agriculture and disconnect from the farm that most citizens in today's

Figure 2. Relationship of selected major on animal use composite score.



Letters indicate statistically significant differences for (p < 0.01).

Figure 3. Demographic factors influencing freshmen students' self-reported differentiation of animal rights and animal welfare.



Asterisks indicate statistically significant differences (*) for ($p < 0.05$) and (**) for ($p < 0.01$).

society experience probably account for much of the discordance that appears to exist between the agricultural and non-agricultural segments of a society. Citizens in Belgium evaluated the current state of farm animal welfare as problematic whereas farmers in Belgium reported satisfaction with farm animal welfare. An extensive, quantitative study categorized the discourse of farm animal welfare between citizens and farmers as those involving an animal's ability to engage in natural behaviors and those related to pain and stress (Vanhonacker et al., 2008). The cause of this discourse needs to be explored. One possible explanation is that scientific knowledge about animal physiology, behavior, adaptation and the practice of scientific objectivity allows industry workers to shape their values using first-hand observations and objective reasoning compared to those who rely on information from mass media sources, which can often harbor hidden bias. An alternate explanation involves the psychological principle of cognitive dissonance, which was first proposed by Festinger in 1957. Simply stated, "*inconsistency between attitudes and behaviors will elicit an aversive state in an individual and the underlying inconsistency will affectively change attitudes in order to maintain a state of consonance*" (Festinger, 1957). Later research by Mauer, et al. has shown that the theory of cognitive dissonance is not as strong of a core motivation as first postulated. Mauer (2006) correlated low course/instructor evaluations with low grade expectations and attributed this positive correlation with cognitive dissonance. In contrast, cognitive dissonance did not appear to explain the disparity in high school student attitudes and behaviors regarding cheating (Vinski and Tryon, 2009). In the present study, students expressed the strongest disagreement to the statements, "Fencing in animals, even domestic ones, is inhumane" and "It is morally wrong to own animals." Granted, both statements express strong animal rights views. However, based on animal ownership information, the overwhelming majority of survey participants have apparently done both, thus, lending support to the theory of cognitive dissonance. Further evidence that cognitive dissonance may play a role in shaping attitudes towards animals was the strong support that 'there should be stiff penalties for cock or dog fighting' since it is unlikely that undergraduate college students actively participate in those activities and society commonly views such activities as morally wrong. Additionally, students in our study also strongly supported 'hunting wild animals for food', a practice that is common in agricultural and rural communities in Ohio. Evidence, from our study, opposing the cognitive dissonance theory was the strong agreement with the statement, "The Amish community should be able to use their horses for draft and transportation". It is a foregone conclusion that survey participates were not Amish since the Amish do not believe in higher education. However, the use of horses for transportation may not be as psychologically unpleasant as practices that result in the suffering and/or death of animals, therefore being morally acceptable to individuals.

Another major factor that influences people's perceptions of animals in society is their stance on speciesism. The term, speciesism, is fairly new, however the idea that different species of animals are given different values, rights and considerations by humans is quite old. Students in our study disagreed (2.44 out 1-5 Likert scale) with the statement "It is acceptable for humans to practice speciesism." In perspective, this statement had the third lowest score in the 20 question survey. Clearly, students believe that it is morally and ethically wrong to show prejudices and discriminations. This may be largely due to mass and social media and the prevalence of "political correctness" threaded throughout today's society. However, recent research suggests significant differences in attitudes towards the treatment of animals depending solely on their species. Sims, et al., (2007) found that when assessing punishments for acts of animal cruelty, people were more interested in

knowing the species of animal involved rather than the type or circumstances of the crime. Additionally, Taylor and Signal (2009) developed a survey instrument (PPP) which was specifically designed to isolate the attitude differences people had between species types (pet, pest and profit species). Participants had significantly different attitude scores based on species category (pet species > pest species > profit species). A similar trend was observed in undergraduate college students where attitude scores showing empathy towards animals were highest for pet species followed by pest species and profit species (Hazel, et al, 2011). The schism in attitude towards speciesism between our study and other studies may be explained by the difference in survey groups, or it may demonstrate a social stigmatism created by the word speciesism compared to data derived from general survey questions without the negative label.

Summary

There are a plethora of views and attitudes towards animals and their appropriate usage. An individual's gender, life experiences and social status clearly play a role in shaping an individual's perceptions of proper animal care, use and treatment by society. An academic understanding of the difference between 'animal welfare' and 'animals rights' is important to all citizens, particularly as politically motivated animal rights groups, such as PETA (People for the Ethical Treatment of Animals) and HSUS (Human Society of the United States) continue to increase their influence and expand their marketing and political campaigns across the nation. Results of this study indicate that some demographic factors are positively correlated with the ability to differentiate between animal rights and animal welfare. Education and past experiences most likely explain these differences, which may not be present in a more diverse population. Animal agricultural industries appear to do an acceptable job educating internal stakeholders. More research is needed to evaluate their educational impact on external stake holders.

Literature Cited

Davey, G., 2006. Chinese university students' attitudes toward the ethical treatment and welfare of animals. Journal of Applied Animal Welfare Science 9(4):289-297.

Festinger, L. 1957. A theory of cognitive dissonance. Evanston, IL: Row Peterson.

Hazel, S.J., T.D. Signal and N. Taylor. 2011. Can teaching veterinary and animal-science students about animal welfare affect their attitude toward animals and human-related empathy? Journal of Veterinary Medical Ethics 38(1):74-83.

Heleski, C.R., A.G. Mertig and A.J. Zanella. 2004. Assessing attitudes toward farm animal welfare: A national survey of animal science faculty members. Journal of Animal Science 82:2806-2814.

Herzog, H. 2007. Gender differences in human-animal interactions: A review. Anthrozoos 20(1):7-21.

Kelbert, S.R. and J.K. Berry. 1980. Phase III: Knowledge, affection and basic attitudes toward animals in American society. United States Government Printing Office: Washington D.C, USA

Mauer, T.W. 2006. Cognitive dissonance or revenge? Student grades and course evaluations. Teaching of Psychology 33(3):176-179.

Miranda-de la Lama, G.C. and S. Mattiello. 2010. The importance of social behavior for goat welfare in livestock farming. Small Ruminant Research 90:1-10.

Morrison, R.S., L.J. Jonston and A.M. Hilbrands. 2007. The behavior, welfare, growth performance and meat quality of pigs housed in a deep-litter, large group housing system compared to conventional confinement system. Applied Animal Behaviour Science 103:12-24.

Paul, E.S. and A.L. Podberscek. 2000. Veterinary education and students' attitudes towards animal welfare. Veterinary Record 146:269-272.

Reading, R.P., B.J. Miller and S.R. Kellert. 1999. Values and attitudes toward prairie dogs. Anthrozoos 12:43-53.

Rose-Meierhofer, S., S. Klaer, C. Ammon, R. Brunsch and G. Hoffman. 2010. Activity behavior of horses housed in different open barn systems. Journal of Equine Veterinary Science 30(11):624-634.

SAS Institute. 1999-2002. Statistical Analysis Software Version 8.02. Cary, NC.

Serpell, J.A. 2004. Factors influencing human attitudes to animals and their welfare. Animal Welfare 13:S145-151.

Shimmura, T., T. Nakamura, T. Azuma, Y. Eguchi, K. Uetake and T. Tanaka. 2010. Effects of social rank and familiarity on dustbathing in domestic fowl. Animal Welfare 19:67-73.

Sims, V., M. Chin and R. Yordon. 2007. Don't be cruel: Assessing beliefs about punishments for crimes against animals. Anthrozoos 20(3):251-259.

Smith, E.R. and D.M. Mackie. 2000. Chapter 8 in Social Psychology, 2nd ed., Psychology Press, Philadelphia, PA.

Swanson, J. 1995. Farm animal well-being and intensive production systems. Journal of Animal Science 73:2744-2751.

Taylor, N. and T.D. Signal. 2009. Pet, pest, profit: Isolating differences in attitudes towards the treatment of animals. Anthrozoos 22(2):129-135.

Te Velde, H.T., N. Aarts and C. Van Woerkum. 2002. Dealing with ambivalence: Farmers' and consumers' perceptions of animal welfare in livestock breeding. Journal of Agricultural and Environmental Ethics 15(2):203-219.

Vanhonacker, F., W. Verbeke, E. Van Poucke and F.A.M. Tuyttens. 2008. Do citizens and farmers interpret the concept of farm animal welfare differently? Livestock Science 116:126-136.

Vinski, E.J. and G.S. Tryon. 2009. Study of a cognitive dissonance intervention to address high school students' cheating attitudes and behaviors. Ethics and Behavior 19(3):218-226.