

The Psychological Effects on Students of Using Animals in Ways that They See as Ethically, Morally or Religiously Wrong

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Summary — Studies indicate that more students are opposing the use of invasive procedures on animals. When students are forced to use animals in ways that they view as harmful, painful, stressful or lethal to the animals, several reactions may occur. Such students may suffer psychological trauma as the result of seeing themselves or others engaged in behaviour that they find ethically objectionable. Their cognitive abilities may become impaired, resulting in less learning. They may withdraw and lose interest in science when not given the option to conscientiously object. Students — even those who believe they are willing participants — can become desensitised and may develop a utilitarian view of animals, thereby diminishing their capacity for compassion and ethical decision-making. Qualified, compassionate people — especially women — often decide to end their career in science rather than compromise their values. This loss contributes to the gender gap in science and to individuals feeling disappointed and derailed in their career aspirations. The psychological consequences to individuals combined with social, environmental, educational and scientific consequences present a compelling argument for the 100% replacement of the harmful use of animals in education.

Key words: *animal use, biological education, dissection in biology teaching, ethics and animal use, medical education, veterinary education.*

Introduction

Why *must* we be concerned with the *psychological* implications of forcing students to use animals in harmful ways? The question is begged by data indicating that more and more students oppose the use of invasive procedures on animals as part of their education and training (1).

In a comparative analysis of public views toward the use of animal research, Pifer *et al.* (2) conclude that, "The status quo in animal research is no longer acceptable to some portion of the public". As debate over the harmful use of animals in education continues, they state, "It is the belief of many scientists that science education will negate the animal rights movement and result in positive public attitudes toward animal research. The present study does not support that belief".

As students become increasingly averse to harming animals and sceptical of the necessity of doing so, they are often confronted by the establishment's reluctance to change. For example, even though, as Akpan states (3):

... [N]umerous studies have indicated that the use of computer simulations, compared to the traditional hands-on method of dissection, provide comparable results . . . , other authors argue against simulations . . .

He cites Bross's 1986 argument that computer simulations are "no substitute for the real thing and carry no weight compared with hands-on laboratory demonstrations . . .".

Contrast these views with studies indicating that when students are forced to use animals in ways they view as harmful, painful, stressful or lethal to the animals, several reactions may occur. Studies by Plous, Milgram, Tyhurst, Kelly and Thomas *et al.*, quoted in Cunningham (4), show that students may suffer psychological trauma as the result of feeling forced to participate in, or of seeing their peers participating in, behaviour they find ethically objectionable.

One's ability to learn is compromised when too much conflict surrounds a learning experience. As far back as the 1950s, psychologist D.O. Hebb showed that, for optimal learning and performance, there must be an optimal level of stimulation. At low levels, he explained, sensory messages may not get through. At high levels, as in stress, learning and performance actually decline (5). Decades of studies of people under stress repeatedly showed that the majority of people become disorganised and function with less effectiveness if they are in crisis. Tyhurst (6), tells us that a full 15% are unable to function at all.

If students are opposed to the harmful use of animals in their education, their education will be com-

promised. The resulting trauma may cause both short-term and long-term adverse consequences. When students are forced to harm animals, the students' cognitive abilities may become impaired resulting in less learning. Observational and critical thinking skills can be dulled (7). Or, in attempting to cope, students can become numb to what was once rightfully disturbing (8).

Students may withdraw and lose interest in science or avoid science classes altogether and change career paths. Students — even those who believe they are willing participants — may become desensitized and develop a utilitarian view of animals, as studies of students' attitudes at the beginning and end of their professional education tell us (9).

These unintended, negative consequences of forcing students to harm animals as part of their education are not only creating a climate of insensitivity, as Stull (10) fears, they are deterring bright, compassionate people (often women) from scientific and medical careers.

The Nature of Psychological Trauma

In 1980, the syndrome of psychological trauma became a diagnosis when the American Psychiatric Association (APA) included in its manual of mental disorders a new category called "post traumatic stress disorder".

The Diagnostic and Statistical Manual IV (DSM IV; 11), the APA's reference to diagnostic criteria, explains that in psychological trauma:

The person's response to the event . . . involve[s] intense fear, helplessness or horror . . . [and that] the characteristic symptoms resulting from the exposure . . . include re-experiencing of the traumatic event, [and] persistent avoidance of stimuli associated with the trauma.

The *DSM IV* goes on to define trauma as:

Direct personal experience of an event that involves actual or threatened death or serious injury, or other threat to one's physical integrity; or witnessing an event that causes death, injury, or a threat to the physical integrity of another person.

While the *DSM IV* limits the definition of trauma to a "threat to one's physical integrity," what if at stake is one's emotional or ethical integrity? Should not "witnessing an event that involves death, injury or a threat to" an animal also be included?

Through the work of writers such as Adams & Donavan (12) and Ascione (13), steps have been made to take seriously the relationship between

domestic abuse of animals, children and women. Arguably, what goes on under the guise of education is animal abuse, and it is possible to make this violence connection in an educational context as well. In short, trauma occurs when there is a threat to one's ethical integrity from direct personal experience of "death or serious injury" to an animal

Examples

Arluke & Hafferty (14) note that the prospect of participating in a "dog lab" in medical school makes many students feel uneasy. They conclude:

Given students' anticipatory feelings, these reports suggest that actually experiencing this [dog] lab would be emotionally trying for many and that various coping mechanisms would develop to minimize or eliminate these unpleasant feelings. However, emotions can be symptomatic of deeper concerns held . . . Going through dog lab, in fact, may be morally trying for students. Their disquietude may reflect, as Goffman [15] contends, a concern for presenting a moral self.

Consider also, the deep conflict that veterinary students are in when they learn the practitioners' dictum . . . *Prima non nocere*. . . (first, do no harm) — even though it is highly likely that in traditional veterinary training, their experiences will include intentionally hurting and killing animals.

During the years that students are being exposed to the harmful use of animals in education, they are busy accomplishing several developmental tasks. Two of these are: 1) the development of an identity — a sense of self, and 2) the development of moral character — a sense of social and moral responsibility.

As one's identity is developing, peer acceptance is critical. Who we are shifts from being shaped by our adult caregivers to being influenced by our peers. To take a stand against something — that first cut into a frog in biology class; that first neck-snap of a mouse in medical school — when it appears to be acceptable to the majority is extremely difficult.

One can only try to imagine — or remember — what it is like for 11–14 year-olds to have to go against their teacher's authority and their peers' acceptance. Or for an aspiring physician/researcher to show sensitivity and compassion within a culture grounded in professional detachment. If, in this difficult process of self-expression, students receive criticism, punishment or ostracism, their self-expression is wounded, often severely. They will thus define themselves as someone who is marginal, or they will concede and become as others want.

Choosing a "protective" insensitivity and/or pretending to be what others' want one to be is by no means relegated to young students. This is what Smith & Kleinman (16) have to say about medical students and those who teach them:

... The culture of medicine that informs teaching ... offers unspoken support for dealing with unwanted emotions. Students['] ... emotional managing strategies include transforming the patient or the procedure into an analytic object or event, accentuating the comfortable feelings that come from learning and practicing 'real' medicine ... , and avoiding sensitive contact ...

They further note:

[Medical] students sometimes criticise their teachers for an apparent insensitivity to their patients, but they turn to desensitising strategies themselves in an effort to control the emotions that medical situations provoke.

Education must stop putting students in double bind conflicts that create stress, depression, anxiety and in unrelenting cases, dissociative symptoms. In a double bind conflict, there is impetus to both approach and avoid the same situation. When education deludes students into thinking that a given animal exercise is critical to their learning, they want to learn. Yet, the nature of the exercise is something that many, based on their ethics and feelings, want to avoid. Such an approach-avoidance situation is fraught with internal conflict.

The "recurrent and intrusive distressing recollections of the event" (11) that help define trauma are often part of one's experience with harming animals under the name of education. Most people remember their dissection class or dog lab experience. Such trauma can become a negatively formative influence, as students resort to coping mechanisms to deal with the effects of trauma, including:

Withdrawal

This reflects our fight or flight instinctual natures. When one's objections are not heard, when one feels hopeless in fighting an infinitely more powerful opponent, withdrawal becomes the only route of escape. This can be the obvious, quitting a class or the grin-and-bear-it response that allows participation, while one's emotions and values shut down.

In its most severe manifestation, withdrawal can take the form of a dissociative reaction where the individual is not just blocking feelings but actually becomes incapable of *feeling* the feelings.

The individual experiences the required and disturbing act as if watching from above, as if it were someone else doing it. Dissociative reactions, when adopted as a way of dealing with a crisis, leave individuals outside the realm of their own experience. This is the most dangerous coping strategy to the individual.

Avoidance

While withdrawal may involve quitting a class, going further and changing one's major and career path is an example of avoidance. This is the most dangerous coping strategy to science and society.

The consequences of using animals in harmful ways can be severe — running the gamut from nightmares, feelings of helplessness, and distancing of compassion for animals. Students and young professionals often go through hell in their efforts not to be forced to participate in something that they see as cruel or ethically repugnant.

As Orleans (17) contends, dissection is a desensitising experience for students. Forced dissection and mandatory participation in so-called "animal labs" desensitises future scientists, doctors, veterinarians and psychologists. These forced exercises turn compassionate, sensitive students away from careers in science, as evidenced by these student quotations (18):

- *Science used to be my favorite subject.*
- *I never took another class in biology [after dissection].*
- *I just felt that if I wasn't involved in science I wouldn't have to [dissect].*
- *I know I would never [pursue] a career that required dissection.*
- *Previously, I'd wanted to be a veterinarian. Science classes were always my favorite. I chose not to take a science class my senior year ... I was appalled by the disrespect for life [that was] demonstrated.*

Rather than seeing students' objections as problems that the teacher must help students get over, we should provide students with an opportunity to fortify their identity, moral development and the moral development of others being challenged by their different ethical perspective.

Psychology and many teachers themselves have not yet embraced the magnitude of trauma students can suffer when forced to participate in the harmful use of animals. Take, for example, the teacher (19) who boasted that:

Students who prefer not to dissect . . . work with the team as a reader . . . This has always been acceptable to my students who initially object . . . I have an ex-student in vet school right now who, the first three days as a reader, was teary eyed through the whole thing!

Such insensitivity to the student and blindness to one's own insensitivity betray the perpetrator of the trauma. Some teachers do not understand that, for the student, something horrible is going on, and that he or she feels helpless to do anything about it. Herzog *et al.* (20) note:

. . . [S]ome students reported that they found certain lab experiences stressful because they caused animals to suffer. Specifically mentioned were a demonstration of anaphylactic shock that was carried out on guinea pigs and a physiology lab that involved pithing frogs.

. . . The use of healthy animals for practice surgery is currently one of the most controversial issues in veterinary medical education, and [more than 50%] of the students we interviewed cited practice surgeries [as] viscerally bothersome or ethically difficult.

Students who oppose harmful animal use often end up performing the exercise anyway. Many students are uncomfortable bringing their concerns to the teachers, as they are authority figures and can be intimidating, even if unintentionally.

As Smith & Kleinman (16) note in *Managing emotions in medical school*:

. . . [in a medical school] . . . discussion of the students' feelings is taboo; their development toward emotional neutrality remains part of the hidden curriculum. Under great pressure to prove themselves worthy of entering the profession, students are afraid to admit that they have uncomfortable feelings about patients or procedures, and hide these feelings behind a 'cloak of competence' (21).

They further state (16):

. . . [S]tudents learn early on that they are not supposed to talk about their feelings with faculty members or other students. Feelings remain private. The silence encourages students to think about their problem as an individual matter, extraneous to the 'real work' of medical school. They speak of . . . 'being tough enough' and 'putting feelings aside'. They worry that the faculty would consider them incompetent and unprofessional . . .

Teachers and administrators sometimes foster an atmosphere that is unreceptive to ethical considerations (4). Students hesitate to voice their objections for fear of a failing grade, ridicule by their peers, lost time (from dropping the course) and having to change career choice. As one student wrote (18):

This experience was against my religious beliefs. I feel that I failed myself, and I felt like I had no choice.

Other students commented (22):

— *. . . [M]y teacher threatened my grade and the second time I objected they told me they would call my parents.*

— *I objected [to dissection] and was failed for the term. Teachers were demeaning; students shoved animal parts in my face . . .*

Even though, as Smith & Kleinman (16) state, medical students learn how to veil their emotions, we still hear physicians remembering and saying things such as, "I will never forget what we did to those poor dogs in medical school" (23). The intensity of certain recollections are from the trauma at seeing another living being treated cruelly and callously within a situation of sanctimonious approval.

Many students, though opposed to dog labs, participate even as an elective. Often their decision is surrounded by a cloud of solemnity and accompanied by tears at day's end (24).

It is curious that many continue to participate despite their own objections. A student's words (24) captured both the conflict and the pained resolution: "I decided that I was either going to have to kill the beagle puppy in class or one day I might be responsible for killing the puppy of the little boy who came to my office". In other words, "dog lab" is for many a classic avoid-avoid (or lose-lose) conflict where *both* options are troublesome and untenable, thus creating a forced decision from being trapped between two evils.

This being trapped between two evils is supported by statements collected from veterinary students by Stull. She writes (10):

Following four months of anatomy taught with donated animals [through the Educational Memorial Program], 80 first-year vet students at Tufts University [School of Veterinary Medicine] were given a questionnaire requesting their comments on the donation program. The Tufts' students overwhelmingly supported the donation program. 95% of students reported that given a choice, they would prefer to dissect and learn anatomy from a donor animal. These students cited ethical objections to dissection of a healthy animal that had been sacrificed.

Additional studies offer ample indication of students' ethical dilemmas in double-bind or lose-lose conflicts and of the desensitisation process they undergo (9):

Veterinary students at two British universities in their first preclinical, first clinical and final years of

study, completed questionnaires . . . to assess their attitudes towards the welfare of animals . . . Analyses . . . revealed that the year of study was significantly related to the perceived sentience [hunger and pain, fear and boredom] of dogs, cats, and cows, with students in their later years of study rating them as having lower levels of sentience . . . There was also a significant interaction between sex and year of study, with the female students maintaining relatively high levels of empathy . . ., whereas the male students showed lower levels of empathy in their later years.

And Stull (10) writes:

The concern that current veterinary education practices may inure students to animal suffering has been given further credence by several studies published in reputable veterinary journals. A March 2000 article in The Veterinary Record detailed the results of a survey of veterinary students at two UK veterinary schools; [cited above] another study, published in The Journal of the American Veterinary Medical Association (JAVMA) in 1991, found that normally expected increases in moral reasoning did not occur over the four years of their veterinary education for the students evaluated. This suggests that the veterinary medical education experience somehow inhibited moral development in these students. A 1999 study also published in JAVMA found that the fourth-year veterinary students appeared to be less likely to treat animals for pain than were second or third-year veterinary students.

A particularly disturbing study by Arluke & Hafferty (14), *From apprehension to fascination with "dog lab" — The use of absolutions by medical students*, suggests that medical schools actually foster a dissociative reaction to the harmful use of animals as the preferred coping strategy.

While this study identifies the "disquietude" and "moral uneasiness" that medical students felt about the "impending" dog lab, the authors expose the process by which this initial moral reservation — or even resistance — is transformed, first, into absolution of responsibility and wrong-doing, and then into "fascination". They note (14):

[A]bsolutions do more than merely neutralize the stigma of questionable behavior and permit some sense of moral self to remain intact; they morally elevate the behavior, making it an honor or privilege to perform while leaving one's moral self completely unscathed if not somewhat 'enhanced'.

Arluke & Hafferty (14) continue:

Despite these uncomfortable feelings, students came to define their experiences, after completing lab, in very positive terms. With two exceptions, all of the

postlab interviewees stressed that whatever their prelab reservations or ethical quandaries, they had come to view labs as an extraordinary beneficial educational experience.

This happened, we argue, because medical school culture provided absolutions to students that neutralized their moral apprehension about dog lab and replaced it with a sense of fascination and awe.

The consequences to science of this "basic training" in absolving one of moral responsibility plays out as the entire discipline of science has traditionally discouraged emotions as an informer of actions. For example, presumably, caring too much for a patient can interfere with delivering good service (16), a notion only recently challenged as medicine attempts to thaw its frozen façade.

As Stanley Milgram, the noted Yale psychologist who was interested in investigating the conflict between obedience to authority and personal conscience, reminds us (25):

. . . [M]en and women were brought in to participate in what they were told was a study of memory . . . They were to play the role of teacher . . . Each time a learner made an error, they were to give him an electric shock. The learner was strapped into a chair while they watched. The teachers had . . . a row of levers labeled from 15 to 450 volts and switches labeled from slight shock to Danger: severe shock to the final XXX. They were instructed to move one level higher . . . each time the learner made an error. There were of course no shocks. [Rather] the learner had been specially trained . . . As the shock level increased . . . the learner could be heard protesting . . . He then began to shout. At 300 volts he began to kick the wall and at the highest level he no longer made any noise at all, not even answering the questions . . . Many of the teachers objected, pleading with the experimenter not to go on. The experimenter did not threaten them in any way but encouraged them to continue by telling them it was absolutely necessary. 65% of the students went all the way to the maximum level [of shock] and none of them stopped before 300 volts.

It is critical that the "teachers" were free to leave at any stage. They were pressured *only* by the authority of the scientist in charge. In fact, Milgram's experiment has been criticised because the prestige of science — represented by the display of technology, the clean white rooms, the experimenter in his white coat and glasses — led subjects to behave in a way they never would do in real life (25).

The Gender Issue

A national hotline and requests for information at NEAVS/ESEC and other national animal advocacy

organisations indicate that it is typically female students who struggle with the ethical questions raised by harmful animal use. Our investigation indicates that a full 76% of all our inquiries about conscientious objection come from females (NEAVS/ESEC representative, 2001). The National Anti-Vivisection Society's nationwide "Dissection Hotline" reports that an estimated 64–80% of their callers over the past 10 years have been females. And The Humane Society of the United States informed us that in a one year period, 70% of their requests for assistance and information were from females.

The National Science Foundation reported that in the USA, women are 51% of the population, 46% of the workforce, and only 22% of scientists and engineers (18). The American Medical Association reports that only 22% of all US physicians are women (18). Why, when female students are slightly more likely to take high school biology than are boys (18), isn't our make-up of scientists and physicians reflective of this? Girls who are forced to dissect or experience difficulties in being allowed alternatives may reject the possibility of further study in biology despite an inherent interest. This suggests that the forced use of animals as part of science education could be a significant contributor to the pitifully small number of women in science. As one study (26) states:

. . . [P]eople supportive of animal experimentation [are] more likely to be male, masculine, conservative and less empathic than those opposed to it.

Gender disparities in science begin to appear in the middle grades and become set by the senior year of high school (27). Pifer *et al.* (2) note that:

Herzog et al. [28] surveyed an impressive range of data from other studies that lend support to the idea that females are more concerned about animal research than [are] males.

Pifer *et al.* (2) conclude:

Consistent with prior research, the strongest relationship uncovered appears to be gender and animal research concerns.

And Plous (1) found that:

. . . [M]ales were more likely than females to label themselves strong supporters of animal research . . . , were more likely to believe that research animals were treated humanely . . . , and were more likely to support the use of animals in undergraduate psychology courses Conversely, females were more likely to support cuts in spending for animal research . . . and were more likely to advocate strengthening the legal regulations that govern animal research . . .

Plous (1) further states that:

Opposition to the use of animals was greatest among women.

It is important to note that the objections of females to the practice of the harmful use of animals do *not* come from assumed stereotypical female qualities of aversion to so-called "yucky" things or of squeamishness. Most women today who voice their concerns do so on the strength of their ethical convictions. Many articulate that while they have no problem working on ethically sourced cadavers, they do have a problem with the wanton and unnecessary taking of life (29).

Educational Change

Fortunately, many universities, professional schools, and teachers are questioning the relevance of harmful animal-based exercises.

At the Third World Congress on Alternatives and Animal Use in the Life Sciences, Orleans (30) informed us that "National laws prohibiting animal experimentation by primary and secondary school students have been enacted in [several countries]". Balcombe (31) noted countries that have banned dissection, or passed laws to protect. To foster empowered science professionals, their early life science lessons must permit students to choose not to harm animals. This will guarantee that students of conscience will be able to enter the fields of science traditionally dependent on the harmful educational and research use of animals. If these students are instead traumatised and, therefore, deterred in the pursuit of their scientific interests, we will have failed to create a body of minds deeply committed to the replacement of animals in science. Thus, the implications of forcing students to dissect their first frog in their first biology class has serious consequences for science and the goals of this Congress.

Conclusion

Stanley Milgram left us an inadvertent warning as far back as 1965, when, after his famous experiments on obedience to authority, he cautioned:

With numbing regularity good people were seen to knuckle under the demands of authority and perform actions that were callous and severe A substantial proportion of people do what they are told to do . . . so long as they perceive that the command comes from a legitimate authority (32).

Fortunately, the ability of students to, as they say, "surpass their masters", leads inevitably to their critical and penetrating observations and often con-

sequent refusal to harm animals as part of their education.

As Aristotle astutely wrote (33), students:

... choose to do what is noble rather than what is expedient ...

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