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Why Eating Animals Is Not Good for Us

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This article focuses on the animal cruelty, health, psychological and social consequences, as well as environmental consequences of an animal-based diet. Animals are intensively bred and raised in factory farms in the most inhumane ways. By far, the greatest numbers of animals reared and killed by humans every year is for human consumption. The numbers are estimated to be greater than 56 billion animals globally. The cruelty involved in the intensive farming of animals is the most widespread form of cruelty imposed by humans on other species. This has significant implications for who we are as a species. Moreover, the belief that humans need to consume animal products to maintain good health has been seriously questioned over the past few decades. It is also a lifestyle choice that is responsible for significant damage to the environment. In contrast, a strong evidence base exists to show that a plant-based diet is health promoting and sustainable. Thus, by cultivating a culture of compassion toward nonhuman animals, current and future generations will benefit through better physical and psychological health and through markedly reduced damage to the planet and all of its inhabitants.

KEY WORDS: animal cruelty, aggression, psychological well-being, human health, animal-based diet, plant-based diet, empathy, moral disengagement, speciesism, environmental health

As humans, we consider ourselves to be the most intelligent species on the planet. Although our sophisticated cognitive and engineering abilities have enabled astounding developments and discoveries, no other species exceeds ours in our potential for destruction (Hamilton, 2010; Linzey, 2015). For reasons of greed, power, and outright cruelty, we are destroying the planet, habitats, individual animals, as well as entire species (Terborgh, 1999). It seems that in current times, we have lost our way. Although as a species we pride ourselves on functioning on more than a basic biological level, virtues and character traits (e.g., courage, justice, humanity, temperance, wisdom, and transcendence) long held by philosophical and religious traditions as central to the good and moral life feature little in today's psyche (Dahlsgaard, Peterson, & Seligman, 2005; Linzey, 2009; Smith, Smith, & Christopher, 2007).

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The materialistic emphasis of modern living has seen these long held virtues become redefined in terms of economic activity and success. This has resulted in negative consequences for both our quality of life and the health of the planet (Hamilton, 2010; Kasser, Ryan, Couchman, & Sheldon, 2004). Despite dire warnings of irreversible climate change if we fail to act, little action has been forthcoming. According to Marco Lambertini, the director general for the World Wide Fund (2014):

> A range of indicators reflecting humanity's heavy demand upon the planet shows that we are using nature's gifts as if we had more than just one Earth at our disposal. By taking more from our ecosystems and natural processes than can be replenished, we are jeopardizing our future. (p. 4)

The World Wide Fund's 2014 Living Planet report shows that our ecological footprint requires 1.5 Earths to meet the demands we currently make of nature each year. Industrialized countries are consuming resources at a much faster rate than the rest of the world. We are leaving little space on this planet for other species. This is despite the fact that our evolution is characterized by a strong interdependence with other species that continues into the modern day (Wilson, 1984, 1993).

There is substantial research reinforcing the benefits that humans derive from interactions with animals (Fawcett & Gullone, 2001; Gullone, 2003, 2013; Gullone & Clark, 2008; McConnell, Brown, Shoda, Stayton, & Martin, 2011; Thompson & Gullone, 2003, 2008). However, the industrialization of everyday life has distorted and in many ways destroyed the animal and nature connection so central to our evolution (Hamilton, 2010; Wilson, 1984, 1993). Instead, today, positive human–animal interactions are predominantly limited to particular species of animals that we have classified as having "companion" status (Signal & Taylor, 2007). For many other species, interactions with humans, and consequences of human actions, have not been so positive. The lives of the majority of species of animals on planet earth are compromised in quality and length by the presence of our species. Much of the world's animal suffering is caused by the subordination of animal interests and welfare to human interests and economic benefit (Linzey, 2009; Rollin, 2006).

Although the argument is not new, in modern times more than ever before it is clear that we need to expand the reach of our kindness and compassion. Albert Schweitzer (1969), a French theologian, musician, philosopher, and physician born in 1875, said,

> We must fight against the spirit of unconscious cruelty with which we treat the animals. Animals suffer as much as we do. True humanity does not allow us to impose such sufferings on them. It is our duty to make the whole world recognize it. Until we extend our circle of compassion to all living things, humanity will not find peace.

Similarly, Mahatma Gandhi is famously known for his statement that "the greatness of a nation and its moral progress can be judged by the way its animals are treated" (Gandhi, 2016). The idea that it is important for our very humanity that we treat animals with kindness is common among the world's great thinkers and philosophers. Indeed, our very survival and the survival of the planet critically depend upon such an evolution. This article

focuses on the Western diet, which is dominated by animal-based foods. It examines the impact of this diet on the human psyche, human health, and the health of the planet.

HUMANS' SOCIAL NATURE AND OUR INTERACTIONS WITH ANIMALS

We humans are a social species that evolved over millennia in a natural environment replete with other living beings. According to Edward Wilson (1984, 1993), the founder of sociobiology, the natural environment is as central to human history as social behavior itself. In his 1984 book entitled *Biophilia*, Wilson described his biophilia hypothesis as a human "innate tendency to focus on life and lifelike processes" (p. 1).

Perhaps the most important characteristic of the human species that influences our attraction to, and extraordinary bonds with, chosen nonhuman animal species is our social nature. One of the most powerful benefits provided by companion animals is social support (McConnell et al., 2011). Moreover, the fact that we are a social species makes social emotions such as guilt and empathy core to our adaptive functioning in social groups. Empathy, concern for others, and compassion undoubtedly have significant survival value given that they, and related competencies such as perspective-taking and effortful control, are of central importance to positive social interactions. They are particularly important for promoting the interpersonal attachments that are so central to our physical and psychological well-being. However, in modern times, our very way of life and the fabric of our culture have become dependent on the exploitation and blatant disregard of the sentient nature and suffering of countless sentient beings. This is most true for the animals we have classified as food. What are the implications for our very human nature of ignoring the mass-scale suffering our modern farming methods and our diet choices inflict on so many sentient beings?

HUMANS' USE AND ABUSE OF ANIMALS

As cogently stated by Rollin (2006), "There is no question that animal agriculture as practiced in Western industrialized countries today is responsible for far more animal suffering than all other uses of animals combined" (p. 329). One of the most popular definitions of animal cruelty is that put forth by Ascione (1999), who defined it as "socially unacceptable behaviour that intentionally causes unnecessary pain, suffering, or distress to and/or the death of an animal" (p. 51). Notably, given that so much animal cruelty involved in the use of animals for human benefit is socially acceptable, it was necessary that the "socially unacceptable" term be included. A more accurate definition of animal cruelty for the current discussion is: *Behavior that causes suffering, or distress to, and/or the death of an animal for instrumental purposes*. It is noteworthy that animals are bred and raised in factory farms without the protection of anticruelty laws that govern interactions with animals who do not have an economic status, such as companion animals (O'Sullivan, 2009).

By far, the greatest numbers of animals are reared and killed for food. It has been estimated that worldwide over 56 billion farmed animals are killed every year by humans for food, and this number is rising (Animal Equality, 2014). That amounts to more than 3,000 animals dying every second in slaughterhouses around the world. These alarming figures do not include fish and other sea animals whose death numbers are so great they are only measured in tons (Animal Equality, 2014). In Australia alone, over 500 million animals are raised for food every year in factory farms (Sharman, 2009). Animals are also exploited for leather, fur, "entertainment" (e.g., circuses, hunting, and bullfighting), and experimentation. Other unspeakable cruelties are suffered by certain species who are killed for their body parts and fluids (e.g., elephants' tusks for ivory, rhinoceros' horns, bear bile, shark fin).

It is not accidental that most people are unaware of the different welfare standards for companion animals versus "production" or "economic" animals. Since it is legally accepted that economic interests should supersede welfare considerations, governments facilitate the methods used for intensive farming by not legislating against cruelty. As highlighted by animal protection scholars, animal welfare laws across the Western world are inconsistent in the ways they protect animals (O'Sullivan, 2009). These inconsistencies are discussed within the context of *necessary suffering*. A necessary suffering principle is applied such that animals are protected from harm as a general rule. However, exemptions are granted for specific reasons, most often being economic reasons. Thus, profitability and necessity are closely aligned in animal welfare regulation (O'Sullivan, 2009). For example, in Australia there are Codes of Practice. These codes deliberately exclude industry or economic animals from protection against cruel treatment. Indeed, they have been referred to as "Codes of Cruelty" by legal authorities and others outside the animal industries (Sharman, 2009). Animal welfare laws exclude animals reared for food or wool; dogs kept in puppy farms for breeding; greyhounds and horses bred, raised, kept, and killed for the racing industry; and animals used for experimentation and entertainment (e.g., circus animals) and are thus subjected to legalized cruelty.

INTENSIVE FACTORY FARMS

Codes of conduct dictate, for example, that mother pigs can be locked up in crates that are barely bigger than their bodies for most of their pregnancy (i.e., gestation crates). Their offspring routinely have their tails and teeth cut off without any form of pain relief (Department of Primary Industries, Victorian Government, 2012). That these procedures are painful is evident from the trembling and vomiting of the piglets that follow.

Dairy cows have been genetically manipulated through selective breeding to produce around 35–50 liters of milk per day, which is around 10 times more than calves would need if they were allowed to suckle from their mother (Dairy Australia, 2014). The unnaturally increased weight of the cow's udder causes painful stretching or tearing of ligaments and infections such as mastitis. Since milk production relies on the constant production of dairy calves, the dairy cow is impregnated soon after she has been milked

to capacity from her previous calving. She is kept alive as a milking machine for as long as she is able to produce enough milk to make her a "profitable unit." This is about 7 years as opposed to an average of 20 years for cows not factory farmed (Voiceless, 2015).

In the dairy industry, calves (mostly male calves) are considered a waste product. Cows are mammals and, as such, develop a strong maternal bond with their calves within as little as 5 minutes after they are born (Flower & Weary, 2001). This bond, which exists in all mammals, promotes the survival of offspring. Separation between mother and baby causes significant separation distress (MacDonald & Leary, 2005). Cows will bellow, calling for their young for days after they have been taken away. Despite this, calves are removed from their mothers soon after birth so that as much milk as possible can be sold for profit (Voiceless, 2015).

Male chickens from the egg industry are also considered waste products, and as many as 11 million are killed each year within a few hours of life by methods such as being gassed to death or collectively ground alive (Voiceless, 2015).

Other invasive and painful intensive farming practices include the castrating, dehorning, and docking of calves' tails. Castration is carried out without local or general anaesthesia in calves under 6 months of age. Females calves are surgically spayed while the females are restrained. There is no specified requirement that an anaesthetic be used for any of these practices (CSIRO, 2004). As with cows, sheep have their tails docked without anaesthesia. Lambs younger than 12 weeks of age are also castrated without pain relief. Mulesing is also carried out on lambs. This involves the removal of wool-bearing skin from part of the breech area of the sheep, also without anaesthesia (CSIRO, 2006).

The demand that consumers create for animal products maintains their economic viability and their continuance. To a great extent, the "necessary" harm is allowed to continue because the corporations involved in the production of animal products have been highly successful in keeping the cruelty hidden from public gaze. This is achieved by keeping intensive farming operations such as slaughterhouses, meat-packing stations, and animal laboratories inaccessible to the public by having them in remote locations and constructed in such a way that public awareness is minimized. The demand for animal products is also kept alive by carefully crafted and managed marketing.

In recent times, increasing animal activism and social media exposure of the cruelty suffered by animals used for human purposes is resulting in a more informed public. Public awareness and reactivity to the cruelty has already led to changes in farming practices. For example, battery eggs are now being phased out in several countries as the public have become increasingly aware of the cruelty involved in battery farms. As consumers become more informed, "necessary" suffering must be redefined since the level of cruelty that the public will accept is significantly less than those who are profiting from the exploitation. One outcome of increasing public awareness is that, in several countries, including Australia, legislation has been proposed (referred to as Ag-Gag legislation) that essentially seeks to silence investigations and to obstruct those seeking to reveal the cruelty that occurs behind the walls of intensive factory farms.

Ag Gag laws first emerged in the early 1990s. They occurred in response to perceived threats posed by animal activists. The legislation, which influenced the development of Ag-Gag laws, was the Animal Enterprise Act (2006), which was passed in the US Senate on September 29, 2006. The law prohibits any person from engaging in certain conduct "for the purpose of damaging or interfering with the operations of an animal enterprise." In many US states, including Kansas, Montana, and North Dakota, it is now a crime to take pictures or shoot video in an animal facility without the consent of the facility's owner (Ag-gag, 2015).

Despite being challenged through increasing public awareness the cruelty involved in animal industries continues. An example is the live export industry in Australia (Australian Live Export Corporation Ltd., 2015). Australia exports over 3 million live animals every year, including cattle, sheep, and goats. They are shipped long distances in distressing conditions that often result in illness and death for a significant number of the animals (Live Animal Export Trade, 2015; Norris et al., 2003; Australian Live Export Corporation Ltd., 2015). The animals are exported to countries that have been shown to have inadequate protection against cruelty (ABC Four Corners, 2011).

In 2011, following a televised documentary exposing the cruelty of live export in several Indonesian abattoirs, there was public outcry that resulted in the then Australian government suspending the export of live animals to Indonesia (ABC Four Corners, 2011). However, a change in government in 2013 saw the resumption of the trade despite continuing public opposition. In addition to revealing the horrific treatment of animals in Indonesian abattoirs, the TV documentary revealed the very real suffering that sentient beings endure when they are facing death—the trembling with fear and the cries of pain. Despite this awareness, most people continue to consume animal products. The potential distress that can be aroused by the discrepancy between being aware of the animal suffering involved and the continued engagement of behavior that supports such suffering is referred to as "cognitive dissonance" (Festinger, 1962).

COGNITIVE DISSONANCE RESOLUTION

There is a robust literature supporting the human need to see oneself as moral, benevolent, and humane (Bandura, 1999). The definition of humane as I use it in this article is an attitude characterized by tenderness, compassion, and sympathy for both humans and animals, and particularly for those who are suffering or distressed. Several mechanisms are invoked to cognitively resolve the discrepancy between the need to see oneself as a moral and humane person while simultaneously continuing to engage in behavior that supports cruel and inhumane practices (Bandura, 1999; Bandura, Barbaranelli, Caprara, & Pastorelli, 1996).

According to Plous (1993), a prominent psychological mechanism is the belief that using animals for our own benefit is natural and necessary for human health and survival. As will be discussed later, this is a real belief by many. Another mechanism is to deny that animals feel pain in the same way that humans do. This is despite the fact that there is compelling

evidence showing that nonhuman mammals react to pain remarkably similarly to humans, both physiologically and behaviorally. For example, responses to pain in both humans and other mammals include increased pulse rate, changes to blood pressure, perspiration, and pupil dilation. Striking similarities in behavioral markers include attempts to avoid the sources of pain, cringing before being struck, writhing, grimacing, crying out, and trembling with fear in anticipation of pain (Rollin, 2006). Indeed, underlying assumptions of parallel physiology between human and nonhuman animals have led pain researchers to use animal pain as a model for better understanding human pain (Mogil, Davis, & Derbyshire, 2010). A convincing argument put forth by Plous is that nonhuman animals most likely feel pain more acutely than humans do since their other senses are often more acute than human senses (Plous, 1993). Such an argument is also evolutionally logical since nonhuman animal survival depends much more strongly on sensory as opposed to cognitive information when compared to humans.

Additional justifications include that animals are not intelligent or self-aware. Denying that animals possess characteristics that are valued and that we believe set humans apart from animals is another mechanism that enables humans to distance ourselves from the harms we inflict on animals (Amiot & Bastian, 2015).

Statements reducing cognitive dissonance that are made about animals today, including by recreational hunters, are strikingly similar to those once used about American slaves. These include: animals benefit from being used; they are content with their lot; they want to be used; animal use is economically necessary and it is inevitable (Plous, 1993).

Cognitive dissonance reducing mechanisms also enable consumers to dissociate their actions from the resulting suffering of sentient beings. Many of the psychological mechanisms involved in the dissociation process that were referred to by Plous in his 1993 paper, and referred to above, overlap with mechanisms involved in the process of moral disengagement that was detailed by Albert Bandura (1999).

According to Bandura (1999), the development of a moral self can be derailed through the process of moral disengagement. Bandura believed that disengagement involves unconscious processes that allow people to commit inhumane and immoral actions and still think of themselves as moral individuals. When individuals commit inhumane acts, they generally try to legitimize or excuse their behavior so as to avoid negative feelings, including guilt or remorse (Bandura, 1999).

Mechanisms involved in both dissociation and moral disengagement include rationalizations of harmful behaviors invoked to keep one's sense of self as a moral and humane person intact. Behavior is cognitively restructured to minimize one's own moral violations by comparing them to more reprehensible acts. Language is a useful tool for the cognitive restructuring of behavior. "Through sanitized and convoluted verbiage, destructive conduct is made benign and those who engage in it are relieved of a sense of personal agency" (Bandura et al., 1996, p. 365). Language can also be used to dissociate the object of cruel or inhumane behavior from the sentient being. Plous (1993) provides an extract from a market report to illustrate the way language is used to facilitate dissociation:

> Harvest levels this past season were off markedly. This is partly a result of last summer's drought, but mostly a function of market price. While some areas reported near normal harvests, my colleagues estimate that many areas have harvested only 10–25 percent of the harvest of last season. (p. 15)

The above passage is referring to live animals for the fur industry, but without knowing that, it is impossible to decipher from the language being used. In industry media, animals are commonly referred to as crops. Hunters and trappers dissociate from their infliction of pain and rationalize their killing behavior by referring to it as harvesting, bagging, thinning, managing, and controlling (Plous, 1993). In the medical literature, animals used in experiments are deindividualized and referred to with numbers rather than names or initials (Leder, 1992). This facilitates their use. The depersonalization that such language serves is consistent with the deindividuation of targets of aggression by the aggressor (Worchel & Andreoli, 1978).

Plous (1993) notes in his paper that dissociation is also apparent in language referring to animals who are consumed as food. Cows are referred to as beef, calves as veal, and pigs as pork. Even when the same word is used for live animals and consumed animals, the latter are usually referred to by a singular noun as in chicken whereas the live animal is referred to by a plural noun or a singular noun with an article. People don't eat turkeys or lobsters, they eat turkey or lobster. That this is a more than useful convention is supported by the fact that plants are rarely given dual names (Plous, 1993).

As noted by Plous (1993), another dissociation mechanism is to control the appearance of the animal product. Commonly consumed animal parts are separated from the part of the animals associated with life or personality, such as the eyes or face. Also, animals are marketed without their heads or feet. These are deliberate strategies adopted by the animal industries that has been documented in their media. For example, the *Meat Trades Journal* has included comments such as:

> To acquaint a customer with the knowledge that the lamb chops she has just purchased were part of the anatomy of one of those pretty little creatures we see gamboling in the fields at springtime is probably the surest way of turning her into a vegetarian. (as cited in Plous, 1993)

Diffusion of responsibility is yet another mechanism that serves to distort the relationship between one's actions and the effects of those actions. Essentially the individual diffuses his or her own responsibility by deflecting it onto others. When responsibility is displaced or diffused, people do not see themselves as accountable for their actions (Mynatt & Sherman, 1975). Using this mechanism, individuals who consume meat, for example, can dissociate from the suffering involved in meat production by deflecting their responsibility onto the many other individuals involved in the process.

While mechanisms of dissociation and the process of moral disengagement are powerful factors for reducing cognitive dissonance and minimizing emotion, an even more powerful set of factors involves historical, cultural, and traditional factors. These latter factors are extremely robust barriers to change. One of the most evident manifestations of these factors is what has become known as speciesism.

SPECIESISM

Speciesism has been defined as discrimination against others based on their species membership (Singer, 1975). It has been referred to as prejudice like other prejudices, such as those against race or gender. The term was coined by British psychologist Richard Ryder in 1970. According to Ryder (2010), discrimination on the grounds of species is just as illogical as that on the basis of race. Thus, if it is accepted as morally wrong to inflict suffering upon innocent human creatures, it logically follows that it is morally wrong to inflict suffering upon innocent nonhuman creatures (Ryder, 2010).

Speciesism is a system that is supported by a set of psychosocial processes that parallel those supporting in-group/out-group status differences. In-group/out-group status processes are factors that enable us to rationalize the cruelty we inflict on other species and our exploitation of them. Indeed, many of the same factors have been used to justify cruelty and exploitation of other humans (Plous, 1993).

There are great similarities in the way we have historically treated certain human groups and the way we treat animals today. For example, Native Americans were hunted prior to 1863, as were indigenous Australians. British settlement into Australia in the 1700s dispossessed indigenous Australians from their land and abused and murdered them. Most notoriously, under federal and state programs that continued into the 1970s, aboriginal children were forcibly removed from their families and sent to live with white families and church-run institutions. This was done for "cultural reprogramming" purposes (Cultural Survival, 2015). Members of racial minority groups have been described as savages or animals (Plous, 1993). There is also evidence that those who were killed in genocides were referred to by perpetrators as undesirable animals (e.g., "vermin," "cockroaches"; Amiot & Bastian, 2015).

There are many parallels between the treatment of slaves in the early history of America and the modern-day treatment of animals. American slaves were auctioned, branded, had their ears cropped, and were bred (Plous, 1993). They were explicitly referred to as "live stock" or "cattle" and as "studs" just like horses and bovines. Childbearing female slaves were called "breeders" and children were referred to as the "increase." Field hands were forced into work with the use of whips, collars, yokes, and chains. Just like cattle in the United States, slaves were fed cornmeal and other things otherwise considered undesirable, including offal, scraps, and bones.

Social psychological research has shown that cruel treatment of the "other" is often justified on the grounds that the out group is inferior to the in group and that members of out groups lack valued qualities possessed by the in group (Joy, 2005). In contrast to the abuse and exploitation often faced by members of out groups (human and nonhuman), being perceived as similar and having in-group status results in markedly more favorable treatment. We see this with humans and we also see it with certain categories of animals, most particularly companion animals who in recent times are regarded by many as much loved family members.

It has taken major social movements to change cultural acceptance of the "isms" of our history, including racism and sexism, and they still have not been fully eradicated

from society. Rather, their existence has become more subtle, and the consequences of the prejudice have become less cruel. As long as there remain advantages to be gained by society's more powerful individuals, groups, and institutions through their exploitation of the less powerful and the voiceless, as is the case with nonhuman animals, the "isms" will continue to exist. What can be hoped for is that through greater understanding and through social movements of compassion and kindness, speciesism will also transition to a more subtle and less cruel form.

It is only by more deeply reflecting on what we, as a species, have to lose by continuing these exploitative and cruel practices that we may move beyond them and onto a path of more compassionate evolution. Our species is certainly endowed with the cognitive capacity that is required for such reflection and change. Cultural change can certainly come. As expressed by humanist psychologist Carl Rogers (1977), through social revolution it is possible that beliefs once perceived as nonsensical become accepted as the norm and what was once accepted as common sense comes to be seen as nonsensical:

> Every social revolution is preceded by, or brings with it, a change in the perception of the world or a change in the perception of the possible or both. Just as inevitably, these altered perceptions are first seen as ridiculous nonsense or worse by the collective common sense of the time. . . The belief that slaves were not chattels to be bought and sold . . . but were persons with full personal rights was not only . . . contrary to history and the Bible, it was economically upsetting and dangerous. . . Yet every one of these "ridiculous" perceptual changes altered the face and the nature of our world. It is the "common sense" that gradually came to be seen as ridiculous. (p. 285)

Unfortunately, at the present time in history, we are yet to undergo the social revolution needed to stop the institutionalized cruelty that is being inflicted on so many nonhuman lives for the benefit of one species—human beings. The intellectual capacities that enable us to use cognitive mechanisms and strategies to avoid short-term cognitive dissonance distress are causing long-term harm to us as individuals, to the larger society, and most certainly to the planet and all of its inhabitants.

It has been argued by many scholars that cultural conditioning to tolerate and even accept the torture of animals as acceptable is a breeding ground for cruel, aggressive, and violent behavior (e.g., Chiu & Lin, 2009; Gullone, 2012; Linzey, 2015; Supreme Master Ching Hai, 2015). Others point out the damage that can be caused when we live with conflicted thinking. According to Joy (2005), institutionalized speciesism encourages acceptance and support of practices regarding other animals while at the same time encouraging denial of the truths underlying those practices, such as that animals suffer in intensive factory farms and that they feel terror (psychological suffering) at impending death. The potential for this process to cause considerable psychological conflict is circumvented by the majority through the use of the psychological mechanisms referred to earlier in the discussion of cognitive dissonance. Thus, recognition of and dissociation from institutionalized speciesism is encouraged. When faced with evidence that opposes the speciesist system, resulting incongruence requires either behavior change

or the development of significant ego defenses and/or psychic numbing for its continuance (Joy, 2005). Such thinking is consistent with psychologist Gordon Allport's (1958) position regarding prejudice: "Prejudice, particularly unconscious prejudice, can cause a deep psychological rift within an individual, in which beliefs and actions are incongruous, emotions and attitudes are ambivalent or conflicting, and values become distorted and hypocritical" (p. 114).

In sum, we are living in a society where we are conditioned to accept certain aggressive behaviors, such as "recreational" shooting, bullfighting, or rodeos, as entertainment or sport when they are targeting particular species (e.g., deer, kangaroo) and others as antisocial when they are targeting other species, such as companion animals. We are socialized to consume animal products and, as a consequence of a combination of tradition and culture, believe that it is necessary for our health and consistent with the natural order to do so. When cruelty is legalized in relation to certain practices and species but outlawed for other species on the basis of the argument that they cause suffering, mixed and confusing messages are communicated contributing to the need for cognitive calibration.

Most individuals seemingly manage the psychological discomfort caused by such conflicting messages through the array of cognitive mechanisms discussed above and potentially many others (e.g., vilifying the recipients, obscuring personal agency, or cognitively reconstructing the conduct; Bandura, 1999). However, it cannot be denied that at a very basic level, societal acceptance of the cruel treatment of animals, such as occurs in recreational hunting, fishing, intensive factory farming, and choosing of animal-based food diets, desensitizes humans to the harm suffered by sentient beings as a result of human actions. Such an attitude underlies the very prevalent attitude that inflicting harm and suffering onto others is acceptable under certain conditions. Setting limits on the degree of suffering that is acceptable and defining the conditions under which causing suffering is acceptable are very subjective decisions with potentially dangerous consequences. Societal acceptance of pain, suffering, and killing of animals is no less than acceptance of compromised empathy.

The consequences in terms of confused thinking and compromised development of empathy and compassion as well as compromised adoption of important societal morals and virtues are of particular concern for populations who are at risk of aggressive or violent behavior. Young people are particularly at risk. For this group of people—whose attitudes are undergoing processes of formation—the contradictions in the way society treats living beings (humans and animals) and particularly different species of animals depending on their category are likely to serve as barriers to the development of empathy and compassion, which are so essential to a social species such as ours.

EMPATHY AND CONCERN ACROSS SPECIES

As a social species, humans have an innate predisposition to develop the capacity to attend to and recognize the emotional needs of others. Social emotions such as guilt and

empathy are essential for positive social interactions. In particular, the self-conscious emotion of empathy serves as a bridge to the emotional states of others. Perspective taking and concern about others' distress are central to healthy functioning since they promote interpersonal responsibility and inhibit harmful acts (Hastings, Zhan-Waxler, Robinson, Usher, & Bridges, 2000). It follows that compromised empathy and compassion are dysfunctional for a social species such as humans.

Indeed, empathy is considered to be integral to psychological health. Although the empathic continuum is broad, it logically follows that one key to psychological wellness is to increase empathic potential by increasing one's sphere of empathy. This can be achieved by including all sentient beings into that sphere (Joy, 2005). The greater our ability to identify with an "other," the greater is our empathic capacity (Plous, 1993). This phenomenon has been noted throughout history (Allport, 1958; Fromm, 1973).

Our capacity for empathy determines our aptitude for compassion, which is a fundamental goal of virtually all spiritual disciplines (Dahlsgaard, Peterson, & Seligman, 2005). "Without unconditional empathy, we may fall prey to the assumption that we can set so-called appropriate limits to our sphere of moral concern, and remain unwittingly complicit in violence while reinforcing a discrepancy between beliefs and behaviors, values and practices" (Joy, 2005; p. 124). Unconditional empathy may seem idealistic, but can we truly work toward nonviolence if we exclude certain sentient beings?

The belief that our treatment of animals is closely related to the way we treat our fellow human beings has a long history, as documented in the works of classical writers including Pythagoras and Porphyry, medieval scholars including Thomas Aquinas, and early philosophers such as Montaigne (1533–92) and John Locke (1632–1704). The view that cruelty to animals hardens the heart and desensitizes one to the suffering of others has received much empirical support in recent decades (Gullone, 2012).

Empirical evidence supports the claim that the nature of humans' relationships with animals is associated with, and predictive of, the way we treat other humans (Gullone, 2012). Research has shown that increased concern for animal welfare is associated with greater concern for other humans (Gullone, 2003, 2012, 2013; Thompson & Gullone, 2003; Wagstaff, 1991). Similarly, empathy toward animals is positively correlated with empathy toward other humans (Preylo & Arikawa, 2008; Taylor & Signal, 2005; Thompson & Gullone, 2003). For example, in their research, Signal and Taylor (2007) showed that animal protection workers showed higher empathy toward both humans and animals when compared with members of the general community.

Developmental evidence also supports that assertion. For example, in their research with adolescents, Thompson and Gullone (2008) showed an association between prosocial behavior toward animals and toward humans. Ascione (1992) and Ascione and Weber (1996) reported that children who participated in a humane education program showed increases in human-directed and animal-directed empathy compared to a control group who did not. In a young adult sample of university students, Paul and Serpell (1993) showed that those who reported more positive attitudes and behaviors toward their companion animals also reported higher levels of empathy toward humans.

The importance of empathy becomes clearer at the extreme ends of the prosocial-antisocial behavioral continuum where those at risk of behaving in antisocial and aggressive ways tend to have compromised empathy along with the presence of callous, unemotional traits and an inability to experience guilt (Hastings et al., 2000). These individuals tend to initiate and engage in persistent antisocial acts, including displays of aggression toward both people and animals (Gullone, 2012; Miller, 2001). While low levels of empathy constitute a risk factor for antisocial and aggressive behavior (McPhedran, 2009), higher levels of empathy can be a protective factor against the development of these behaviors. As already noted, empathic and prosocial youths are more inclined to treat other humans and their companion animals with greater kindness and compassion (Poresky, 1990; Vidovic, Stetic, & Bratko, 1999).

It follows that promotion of social change toward a broadening of our sphere of compassion to include all sentient beings will not only flow over into human–human relations, thereby cultivating increased kindness toward other humans and decreased violence and aggression, it will also lead to a more compassionate evolution of our species. Such a social change cannot come soon enough given the destruction that the human species is wreaking on the planet and its living inhabitants (World Wide Fund, 2014). Where once we needed to subdue nature for our very survival, technological advancements of today require that we apply our sophisticated cognitive and engineering abilities with compassion and a gentle hand.

At the same time that technology has vastly increased human capacity for grand scale destruction, materialism has hijacked our moral compass, and we have become brainwashed into believing that satisfying our personal short-term hedonistic pursuits will bring us enduring happiness (Nickerson, Schwartz, Diener, & Kahneman, 2003). However, research has shown that accumulating personal wealth and the pursuit of individual success brings only temporary satisfaction (Diener & Seligman, 2002; Myers, 2000).

Moreover, increased focus on individual pursuits has weakened social capital and our capacity to care. As stated by a growing number of thinkers and as supported empirically, the growth of individualist and materialist values is associated with a growing sense of individual alienation, social fragmentation, and civic disengagement. This situation is concerning in that it reinforces an inward or self-focus and reduced compassion. It distracts individuals away from the suffering that their lifestyles bring about to other beings, human and nonhuman. Ultimately, it reduces quality of life for all. It is also associated with a decline in spiritual, moral, and ethical aspects of life (Carlisle, Henderson, & Hanlon, 2009).

Further highlighting the importance of concern for others and empathy, research has shown the central importance of good relationships for enhanced happiness, quality of life, resilience, cognitive capacity, and, arguably, even wisdom. Indeed, intimate relationships and secure attachments have been found to be central to our quality of life. People with overt psychopathology have a lower quality of life most strongly characterized by a deficiency in intimate relationships (Walsh, 2011). As a social species, humans cannot find

enduring happiness in the selfish pursuits encouraged by consumer culture (Nickerson et al., 2003).

Relationships with other humans and, for many, with companion animals contribute significantly to our psychological well-being and quality of life. These relationships help relieve the loneliness that has become so prevalent in modern Western society within which the prevalence of people living alone has increased markedly in recent decades (Gullone & Clarke, 2008; Siegel, 1990). Our relationships with animals also help us to meet our belongingness and social support needs (Baumeister & Leary, 1995; Cohen, 2004; McConnell et al., 2011). It is through our relationships that we can develop a sense of connection and life purpose and achieve a deeper, longer lasting happiness (Post, 2009). By broadening our circle of compassion, we are broadening our opportunities for helping others and for developing a sense of connection (Post, 2009).

THE BENEFITS OF BENEVOLENCE

Developing a sense of connection and life purpose, kindness, compassion, and benevolence not only benefit the recipient but also the giver. A growing body of evidence shows that compassion, concern for others, and prosocial behavior engage both psychological and neurophysiological processes known to have beneficial effects on basic systems, including the immune system. Stephen Post, author of the best-selling book *The Hidden Gifts of Helping*, has highlighted the connection between living an altruistic, loving, and generous life and being happier and healthier as well as living longer (Post, 2011). "Call it karma, call it the boomerang effect, call it the sea of life; the wisdom of the ages has it that actions on behalf of others have a payback feature; the benefits of unselfish acts revert back to the giver. Virtue, as the saying goes, is its own reward" (Post, 2009, p. 18). The benefits of benevolence have been shown in study after study (Post, 2009).

Volunteering has been shown to have powerful beneficial effects for the volunteers themselves. For example, Arnstein, Vidal, Well-Federman, Morgan, and Caudill (2002) found that individuals who were suffering from chronic pain were found to experience decreased pain intensity, levels of disability, and depression when they became involved in a peer volunteer program for others also suffering from chronic pain. Other studies, including longitudinal research that has controlled for lifestyle factors including smoking, exercise, social connections, paid employment, health status, socioeconomic status, and baseline functional limitations, has found similar benefits (Luoh & Herzog, 2002; Moen, Dempster-McClainm, & Williams, 1989; Morrow-Howell, Hinterlong, Rozarion, & Tang, 2003).

Volunteering is also associated with substantial mortality rate reductions (Post, 2009). For example, in one longitudinal study, adults aged 55 years and over were divided into two groups depending on their average volunteering hours (less or more than 4 hours per week). After adjusting for health status, a statistically significant association was found between high volunteerism and decreased mortality. Those who volunteered more had as much as 44 percent decreased mortality compared to the low volunteering group. Other studies have replicated this finding (Harris & Thoresen, 2005).

Even just thinking about giving has a physiological impact (Post, 2009). How can these benefits be explained? According to Albert Schweitzer, a winner of the Nobel Peace Prize, "The only ones among you who will be really happy are those who have sought and found how to serve" (Schweitzer, 2009). As is also believed by Buddhists, the welfare of oneself and that of others is inseparable. Personal happiness is connected with a healthy environment and caring for the well-being of others. It follows that by broadening our circle of compassion and by helping others through volunteer work, including, for example, the fostering of homeless animals or the adoption of a more compassionate lifestyle that aims to minimize suffering of all living beings, we will achieve a deeper, long-lasting happiness.

SUMMARY OF OUR RELATIONSHIPS WITH OTHER ANIMALS

In sum, although ultimately the majority of individuals in society develop an uncontested belief system (since it is consistent with societal and cultural norms) that it is acceptable to use animals for food, recreation, and entertainment, at some level, this system requires *management* of incongruences. Cognitive adjustments need to be made (often subconsciously) when we are expected to accept that harming certain animals (i.e., companion animals) is cruel and should be illegal and that harming others (e.g., "food" animals, "pest" species, hunting targets) is acceptable or indeed even enjoyable as in rodeo, fishing, hunting, and bullfighting. We are required to rationalize the infliction of pain and suffering on sentient beings since it is known and accepted that nonhuman animals value their life as we humans do and that they suffer as we humans do. Many individuals continue in their lifestyle choices that are harmful to millions of sentient beings without experiencing psychological distress through the effective use of psychological mechanisms as discussed above.

Continuing to live in ways that are harmful to others is further enabled by the cruelty involved in intensive farming remaining predominantly hidden from public view or being effectively managed through clever marketing. The *ignorance* factor is enormously effective for the success of animal agriculture. Despite the effective management of cognitive dissonance, one has to ask, what cost does living a life that supports violence and cruelty have on individuals and more generally on society? Research has shown us that such a lifestyle encourages indifference to the suffering of others (Preylo & Arikawa, 2008; Taylor & Signal, 2005; Thompson & Gullone, 2003, 2008). Ultimately, the fact that the cruelty involved in the intensive farming of animals, although legal, is the most widespread form of cruelty imposed by humans on other species has significant implications on who we are as a species. It also has implications for the amount of harm and suffering inflicted on other living, sentient beings that we are prepared to accept, purely for our own benefit or satisfaction.

What makes this situation worse is that the long-held belief that humans need to consume animal products to maintain good health has seriously been questioned in recent times, and indeed, research is increasingly showing that not only do we *not* need to consume animal products for good health, we should avoid them for good health. The evidence is accumulating that an animal-based diet significantly contributes to chronic illness and to environmental degradation. This will be the focus of the next section.

HUMAN AND ENVIRONMENTAL HEALTH CONSEQUENCES OF AN ANIMAL-BASED FOOD DIET

Advances in nutrition research during the past few decades have changed the understanding of the contribution of diet to human health and disease. Not only has this research reinforced the important role played by diet in our health, it has also demonstrated serious flaws in our assumptions about what constitutes a healthy diet. There has been a significant paradigm shift (Sabate, 2003). Whereas animal-based diets were once considered by professionals to be essential for good health and still are by the majority of the population, empirical research is clearly showing that the opposite is true. Diets largely based on plant foods are now accepted as being health promoting and protective against many chronic diseases (Benzie & Wachtel-Galor, 2010; DeMaria, 2010; Dewell, Weidner, Sumner, Chi, & Ornish, 2008).

Thus, not only are the processes necessary for the production of animal-based food products the cause of enormous suffering and death of millions of sentient beings every year, fast accumulating evidence is showing that an animal-based diet is bad for our health. Such a diet is a significant risk factor for many chronic diseases. These diseases have come to be referred to as diseases of affluence, since animal-based diets have historically been adopted by the more affluent societies in the world. This trend is continuing in recent times with traditional plant-based diets becoming replaced with animal-based diets in developing nations as they transition toward being more economically wealthy (World Health Organization, 2003).

The 2003 World Health Organization (WHO) report into the role played by diet as a risk factor in chronic disease highlights that changes in the prevalence of chronic disease coincide with changes in diet. These changes that have occurred in the second half of the 20th century first occurred in industrial regions of the world and more recently in developing countries. The most significant change is one from largely plant-based traditional diets to high-fat, energy-dense diets with a substantial content of animal-based foods. According to the report, combined with other risk factors including physical inactivity, these changes have brought about an acceleration in the pace at which the chronic disease epidemic is emerging in the developing countries that have seen such a transition. In contrast, countries that have maintained their traditional plant-based diets have not shown increased rates of chronic disease.

An example referred to by the WHO is that of the Republic of Korea whose community has largely maintained its traditional high-vegetable diet despite major social and economic change. The Republic of Korea also retains its lower rates of chronic diseases and lower than expected level of fat intake and obesity prevalence than other industrialized countries with similar economic development (Kim, Moon, & Popkin, 2002; Lee, Popkin, & Kim, 2002).

A large study confirms these findings. Referred to as "The China Study" (published in a book with the same title; Campbell & Campbell, 2006), the study began in 1983 and continued over a 20-year period. It was conducted jointly by the Chinese Academy

of Preventive Medicine, Cornell University, and the University of Oxford. It has been described as "the Grand Prix of epidemiology" (The China Study, 2014). The study examined mortality rates from 48 forms of cancer and other chronic diseases. These were examined in 65 counties in China between the years from 1973 to 1975. These data were then correlated with data obtained between 1983 to 1984 from surveys on diet and blood tests from 6,500 people (100 people from each of the 65 counties that were included in the 1973 to 1975 data set).

The study outcomes indicated that a high consumption of animal-based foods was predictive of higher death rates from "Western" diseases (otherwise referred to as diseases of affluence), while the opposite was true for counties that ate more plant foods. People who eat a plant-based, otherwise referred to as a vegan, diet (i.e., people who do not consume animal products including beef, pork, poultry, fish, eggs, cheese, and milk) have a significantly reduced risk of developing many chronic diseases (Campbell & Campbell, 2006). The diet is also characterized by limited intake of processed foods and refined carbohydrates such as white bread.

According to Campbell and Campbell (2006), there is compelling evidence indicating that the Western diet that evolved in the world's industrialized nations, most particularly, the United States, United Kingdom, and Australia and that is now increasingly being adopted in developing countries including China itself, is predictive of the obesity problem that is sweeping Western nations and many other chronic diseases including heart disease, different cancers, and autoimmune diseases including multiple sclerosis, rheumatoid arthritis, type 1 diabetes, and Graves's disease (the most common autoimmune disease, also known as hyperthyroidism).

A major conclusion provided on the basis of The China Study is that an enormous amount is known about the relationship between nutrition and health but the public remains somewhat confused or mistaken about the facts. This is because "the real science is buried beneath a clutter of irrelevant or even harmful information—junk science, fad diets and food industry propaganda" (The China Study, 2014, p. 1). Several other prominent proponents of the health benefits of plant-based diets provide detailed evidence of the powerful and misleading role played by industry food giants in propagating what science is now showing to be myths about the nutritional benefits of animal-based foods. See, for example, information for Neil Barnard, founding president of the Physicians Committee for Responsible Medicine and others (Neil D. Barnard, 2014; Esselstyn, 2007; Keon, 2010; McDougall, 1985; McDougall & McDougall, 2012; Robbins, 1987). The role played by the giant food industries was highlighted recently when the meat industry in the United States expressed clear disapproval following the release of the 2015 American dietary guidelines (USDA, 2015), which state that a diet higher in plant-based foods and lower in animal-based foods is more health promoting and is associated with less environmental impact than the current US diet (Cantor, 2015).

Significant factors of lifestyle, culture, tradition, psychological resistance to change, and powerful lobby group pressure are still largely obstructing change toward a healthful diet. Powerful industry and lobby groups are monopolizing on the confusing mes-

sages about diet. Consequently, the majority of public opinion still largely consists of outdated beliefs that the consumption of animal foods is necessary to meet nutritional requirements. On the positive side, understanding the benefits of a plant-based diet is slowly beginning to break through. Some dietary guidelines now recommend *minimum* amounts of plant-based foods and *maximum* amounts of animal-based foods as can be seen in the most recent version of the Australian dietary guidelines (2013). As noted above, the beneficial health effects of a plant-based diet along with the harmful effects of an animal-foods diet are also now stated in the 2015 American dietary guidelines (USDA, 2015).

THE HUMAN HEALTH BENEFITS OF A PLANT-BASED DIET

There is sufficient scientific evidence available to justify promoting a plant-rich diet as a public health policy (Benzie & Wachtel-Galor, 2010). Stated positions by dietetic associations are clear. For example, the American Dietetic Association stated that "it is the position of the American Dietetic Association that appropriately planned vegetarian diets, including total vegetarian or vegan diets, are healthful, nutritionally adequate, and may provide health benefits in the prevention and treatment of certain diseases" (American Dietetic Association, 2009). "Well-planned vegetarian diets are appropriate for individuals during all stages of the lifecycle, including pregnancy, lactation, infancy, childhood, and adolescence, and for athletes" (American Dietetic Association, 2009, p. 1266). The American Dietetic Association's evidence-based review also states that vegetarian diets are associated with a lower risk of death from ischemic heart disease, lower cholesterol levels, lower blood pressure, and lower rates of hypertension as well as lower prevalence of type 2 diabetes when compared to nonvegetarians. Vegetarians and vegans also are more likely to have a lower body mass index and lower overall cancer rates. Benefits are related to lower intakes of saturated fat and cholesterol and higher intakes of fruits, vegetables, whole grains, nuts, soy products, fiber, and phytochemicals.

Fruit, vegetables, whole grains, and legumes contain a complex mixture of phytochemicals possessing potent antioxidant, antiproliferative, and cancer-protective activity as well as being protective against other chronic diseases including heart disease (Dewell et al., 2008). On the basis of their review examining the scientific evidence for the role of plant-based diets in the prevention and management of diabetes, Marsh and Brand-Miller (2011) conclude that such diets provide exceptional health benefits. These include reduced risk of obesity, diabetes, heart disease, and some types of cancer as well as increased longevity (Singh, Sabate, & Fraser, 2003). A diet absent of red meat and processed meat products provides particular benefits in the management of diabetes and prediabetes. Not only has research shown evidence of the benefits of a plant-based diet regarding illness prevention, it has also shown that heart disease can be reversed by adoption of a completely plant-based diet (Barnard, Katcher, Jenkins, Cohen, & Turner-McGrievy, 2009; Esselstyn, 2007; Esselstyn, Gendy, Doyle, Golubic, & Roizen, 2014; Ornish et al., 1990; Sabate, 2003). Other reviews have provided similar conclusions (Craig, 2009, 2010;

Crowe, Appleby, Travis, & Key, 2013; Fraser, 2009; Ornish, 2011; Tuso, Ismail, Ha, & Bartolotto, 2013).

Plant-based diets contain many nutrients known to have independent health benefits and have not shown any adverse effects on health. These conclusions are based on studies using various methodologies including large epidemiological studies (McEvoy, Temple, & Woodside, 2012).

ANIMAL-BASED DIETS' DAMAGING EFFECTS TO HUMAN HEALTH

On the other hand, consumption of red meat and processed meat has consistently been found to be associated with an increase in the risk of colorectal (Cotterchio et al., 2008) and other cancers including breast cancer (Butler et al., 2010; Cho et al., 2006; Craig, 2009, 2010). Processed meats have particularly been singled out as having cancer-increasing properties due to the presence of polycyclic aromatic hydrocarbons and heterocyclic amines produced during their preparation.

In the first large-scale prospective study examining the relationship between red meat consumption and health, Pan and colleagues (2012) observed 37,698 men from the Health Professionals Follow-up Study (1986–2008) and 83,644 women from the Nurses' Health Study (1980–2008) who were free of cardiovascular disease and cancer at baseline. After adjusting for major lifestyle and risk factors, their data analysis showed that red meat consumption is associated with an increased risk of total cardiovascular disease and cancer mortality. Substitution of other healthy protein sources for red meat, such as protein-rich plants, is associated with a lower mortality risk.

Concern that red meat consumption is necessary to avoid iron deficiency is unfounded. Research has highlighted the role of plant ferritin as a readily available source of iron that is abundant in plant-based, iron-rich foods (Argarwal, 2013).

A 2014 paper published in the *European Journal of Clinical Nutrition* found that by replacing red meat in their diet with legumes (lentils, peas, beans), people with type 2 diabetes benefitted significantly. The red meat replacement group showed improvements in blood glucose, insulin, triglyceride levels, and LDL ("bad") cholesterol (Hosseinpour-Niazi, Mirmiran, Hedayati, & Azizi, 2014). In another study also published in 2014 in the *Journal of the American Heart Association*, the diets of 4,098 men and women who had previously had heart attacks were analyzed (Li et al., 2014). It was found that people who followed a low carbohydrate, high animal foods (protein and fat) diet were 33% more likely to die from any cause and 51% more likely to die from heart disease compared with those whose carbohydrate intake was higher and animal protein and fat intake was lower.

It is not only meat that has been found to have harmful health effects. The consumption of eggs, which are high in cholesterol, has also been implicated as a risk factor for cardiovascular disease. In their 20-year follow-up study, Djousse and Gaziano (2008) found that egg consumption was positively correlated with mortality, particularly in diabetic participants. It is a widespread misconception that the consumption of dietary

cholesterol and egg yolks is harmless. Dietary cholesterol, including that from egg yolks, is harmful to the arteries (Spence, Jenkins, & Davignon, 2010). People with diabetes and cardiovascular disease are at increased risk. In addition, egg consumption has been related to increased risk of a lethal form of prostate cancer among men (Richman, Kenfield, Stampfer, Giovannucci, & Chan, 2013).

To investigate possible mechanisms underlying the harmful effects of animal food consumption, Tang and colleagues (2014) followed 720 patients who had previously been treated for heart failure for 5 years. They found that a compound produced in the gut when the body digests meat may be a cause of heart failure. This compound, known as trimethylamine N-oxide, is produced in the digestion of organ meats, red meat, and eggs. It was found that those people with the highest levels of the compound had a 3.4-fold increased risk of dying.

Dairy, yet another highly consumed animal product that is believed to be necessary for strong bones, has also been shown to have harmful health outcomes. Based on a review of epidemiologic and prospective studies, the efficacy of the use of dairy products for the promotion of bone health was questioned (Barnard, Berkow, & Lanou, 2005). It was concluded that the increased consumption of dairy products has not shown a benefit for either child or young adult bone health. Lanou's (2009) comments on dairy are more damning. She argues that despite recommendations that cow's milk is necessary for human growth and for bone health, evidence documented over the past 20 years tells a different story. Rather than promoting bone health, data show that osteoporotic bone fracture rates are highest in countries that consume the most dairy, calcium, and animal protein. Indeed, most studies examining fracture risk have found little or no evidence that milk or other dairy products benefit bone strength (Sonneville, Gordon, Kocher, Pierce, Ramappa, & Field, 2012).

Other recent research is showing a more alarming picture. Rather than being health promoting, consuming milk or dairy products may contribute to the risk of prostate (Mitrou et al., 2007) and ovarian cancers, autoimmune diseases, and certain childhood ailments (Campbell & Campbell, 2006; Keon, 2010). Because milk is not necessary for humans after weaning and the nutrients it contains are readily available in foods without animal protein, saturated fat, and cholesterol, dairy products should not be recommended as part of a healthy diet at any stage during the lifespan (Lanou, 2009; Ludwig & Willett, 2013; Melnick, 2009).

In an 11-year follow-up study of 20,885 men, it was found that a diet high in calcium intake, mainly from dairy products, increased the risk of the men developing prostate cancer (Chan et al., 2001). Others have found supporting results (Park, Mitrou, et al., 2007; Park, Murphy et al., 2007; Song et al., 2013). In another prospective study, the relationship between dairy intake and risk of Parkinson's disease was examined (Chen et al., 2007). The study involved 57,689 men and 73,175 women from the American Cancer Society's Cancer Prevention Study II Nutrition Cohort. In this sample, 250 men and 138 women were identified as having Parkinson's disease during follow up (1992–2001). The findings showed that a greater consumption of dairy predicted a greater risk of develop-

ing Parkinson's disease. Others have found that the consumption of dairy is associated with health risks, including multiple sclerosis (Malosse, Perron, Sasco, & Seigneurin, 1992), ovarian cancer (Larsson, Orsini, & Wolk, 2006), insulin resistance, and metabolic syndrome (Lawlor, Ebrahim, Timpson, & Davey Smith, 2005).

A 2014 study published in the *British Medical Journal* involving two large cohorts of women (61,433) and men (45,339) found that high milk intake (three or more glasses of milk per day) was associated with higher mortality in both women and men, and with a higher fracture incidence in women (Michaelsson et al., 2014). With each glass of milk, mortality risk increased by 15%. Although strong, healthy bones require minimum intake of calcium and vitamin D, calcium obtained from animal products is leeched from bones, while plant-based calcium does not have this effect. Consumption of dairy and animal proteins promotes an acidic state, and since the body prefers an alkaline state, it draws on calcium from the bones to buffer against the acidity (Keon, 2010). Further support for this finding was provided by the 2003 WHO report that states that protein intake from animals but not vegetables outweighs the positive effect of calcium intake on calcium balance.

In summary, research over the past several decades has increasingly concluded that a plant-based diet is superior for the promotion of health and that a diet high in animal-based foods, including meat—particularly red meat and processed meat, eggs, and dairy—is predictive of poorer health outcomes. Case control studies, longitudinal studies, and large-scale epidemiological studies have shown that animal food consumption increases the risk of many chronic diseases, including heart disease, prostrate and other cancers, diabetes, and other autoimmune diseases. Moreover, the strongly held beliefs that red meat is necessary for iron and protein intake and dairy for calcium intake have been shown to be problematic and unfounded. This new understanding is grounded in sound empirical research and is largely reflected in the most recent versions of the 2013 Australian dietary guidelines (Australian Dietary Guidelines, 2013) and 2015 US dietary guidelines (USDA, 2015).

It is also noteworthy that following decades of research showing that an animal-based foods diet is not only bad for our health but also bad for the planet, the US dietary guidelines and, to a lesser extent, the Australian dietary guidelines, at last, include acknowledgment of negative environmental impacts. According to the US Dietary Guidelines Advisory Committee:

> The major findings regarding sustainable diets were that a diet higher in plant-based foods, such as vegetables, fruits, whole grains, legumes, nuts, and seeds, and lower in calories and animal-based foods is more health promoting and is associated with less environmental impact than is the current U.S. diet. (USDA, 2015, Part A, Executive Summary, p. 7)

The United States and Australia are not alone in their recommendations for a healthy and sustainable diet. Other countries include Germany, Sweden, the Netherlands, and Brazil, who have also incorporated sustainability into their nutrition policies (Johns Hopkins Center for a Livable Future, 2015).

ANIMAL-BASED DIETS AND ENVIRONMENTAL HEALTH

In its 2003 report, the WHO noted that the growing demand for animal products forecast an undesirable impact on the environment. To demonstrate the impact, a comparison of land capacity by food type was provided. The number of people fed in a year per hectare ranges from 22 for potatoes, 19 for rice and one and two, respectively, for beef and lamb. It was also stated in the report that a global shift toward a plant-based diet is vital to save the world from the worst impacts of climate change. Western tastes for diets rich in meat and dairy are unsustainable for a planet whose population is surging toward 9.1 billion people by 2050. According to the report, meat and dairy products are the main culprits. They respectively account for 70% of global freshwater consumption, 38% of the total land use, and 19% of the world's greenhouse gas emissions.

Three years later in 2006, the Food and Agriculture Organization of the United Nations released a report called *Livestock's Long Shadow* (Food and Agriculture Organization, 2006). The report provided an assessment of the full impact of the farmed animal sector on global environmental problems. In addition to farmed animal grazing and other related issues, the assessment included impact of feed crop agriculture for farmed animal production. The report concluded that the farmed animal sector is one of the most significant contributors to the most serious environmental problems. The contribution to environmental problems by farmed animal production is on a massive scale, so massive in fact that it needs to be addressed with "urgency." The environmental problems associated with the farmed animal sector relate to extensive grazing, land degradation, atmosphere and climate, water usage requirements, and biodiversity loss.

Extensive grazing degrades vast areas of land despite there being greater intensification and industrialization. The farmed animal sector is by far the single largest user of land resulting in the largest areas of degradation by humans. The total area occupied by grazing is equivalent to 26% of the ice-free terrestrial surface of the planet. In addition to grazing-related land degradation, 33% of arable land used is dedicated to feed crop production. In total, farmed animal production accounts for 70% of all agricultural land use and 30% of the land surface of the planet. In areas such as Latin America, a rapid increase in deforestation is already occurring with 70% of previously forested land in the Amazon now being occupied by pastures and feed crops. This figure will only grow with predicted increases in animal-based diet consumption in countries such as China. Meat consumption is trending toward a 75% increase by 2050 along with a 65% increase in dairy compared with 40% for cereals (Carrington, 2014).

In addition to land degradation, there is the impact of farmed animals on farmed animals atmosphere and climate. Here too, animal agriculture is a major contributor to greenhouse emissions, being responsible for 18% of emissions. This amount is a higher share than that contributed by *all forms* of transport. Animal agriculture is responsible for far greater amounts of those gases that have greater potential to warm the atmosphere. These include 37% of anthropogenic methane, 65% of anthropogenic nitrous oxide, and 64% of anthropogenic ammonia emissions. Ammonia emissions are a significant contributor to acid rain and acidification of ecosystems.

Another significant harmful effect of farmed animals on the environment is in relation to water usage. The world is facing increasing freshwater shortage problems. As much as 64% of the world's population is expected to live in water-stressed basins by 2025. The livestock sector accounts for more than 8% of global human water use. This is mostly for the irrigation of feed crops. In addition to water use, the sector is responsible for water pollution resulting in "dead" zones in coastal areas, degradation of coral reefs, human health problems, and the emergence of antibiotic resistance. The major contributors to animal agriculture-related water pollution are animal waste, antibiotics and hormones, chemicals from tanneries, fertilizers and pesticides used for feed crops, and sediments from eroded pastures. Compacting of soil, reduction in infiltration, degradation of the banks of watercourses, drying up of floodplains, and lowering of water tables are additional significant negative outcomes of the animal agriculture practices.

We are in an era of unprecedented threats to biodiversity. According to the 2014 Living Planet report, the *Living Planet Index*, mammals, birds, reptiles, amphibians, and fish have declined 52% between 1970 and 2010 (World Wide Fund International, 2014). Thus, vertebrate species populations across the globe are, on average, about half the size they were 40 years ago. This is a markedly bigger decrease than has been reported previously.

As noted earlier, assessment detailed in the Living Planet report indicates that our ecological footprint shows we would need 1.5 earths to meet the demands humanity is currently making on nature each year. These demands include the renewable resources we consume for food, fuel, and fiber. For more than 40 years, humanity's demand has exceeded the use of the amount of biologically productive land and sea area that is available to regenerate these resources. This continuing overshoot is making it more and more difficult to meet the needs of a growing global human population, as well as to leave space for other species. It is noteworthy that demand is not evenly distributed. People in industrialized countries, who have adopted diets that are high in animal-based foods, are not surprisingly consuming resources and services at a much faster rate.

Consistent with multiple publications and reports (Chiu & Lin, 2009; Leitzmann, 2003; McMichael, Powles, Butler, & Uauy, 2007; Ornish, 2012; Sabate & Soret, 2014; Scarborough et al., 2014) a 2014 Chatham Report relating to the animal agriculture sector concluded that shifting consumption of meat and dairy products is of significant global importance to avoid dangerous climate change (Chatham House, 2014). Unfortunately, there has been a general lack of attention given to the relationship between diet and environmental degradation by both governments and environmental groups. This has contributed to a significant lack of understanding about the links between animal agriculture and climate change in the general public. Closing this awareness gap is the first step to change. Fortunately, this process has now begun with dietary guidelines in several countries acknowledging this link. Reinforcing the health benefits associated with a plant-based diet will strengthen consumers' motivation to change their behavior since those factors that have an immediate and direct personal impact will be given higher priority to individual behavior change compared to long-term, indirect outcomes associated with climate change.

SUMMARY OF THE CONSEQUENCES OF DIET ON OUR HEALTH AND THAT OF THE PLANET

In summary, the world's growing demand for animal products is having a significantly adverse effect on the health of the planet. A global shift toward a plant-based diet is vital to save the world from the worst impacts of climate change. Western tastes for diets rich in meat and dairy are unsustainable for a planet whose population is surging toward 9.1 billion people by 2050. The environmental problems associated with the livestock sector relate to extensive grazing, land degradation, atmosphere and climate, water usage requirements, and biodiversity loss. In an era of unprecedented threats to biodiversity and increases in human population, the need to educate the public about the necessity to change our lifestyle choices so that they are more sustainable could not be more urgent.

OVERALL CONCLUSION

Most of us believe that we are compassionate and moral people, and most of us consider ourselves to be "animal lovers." Most of us also abhor animal cruelty. When we are exposed to cases of animal cruelty or are faced with the suffering of animals, most of us become quite disturbed. In Western, industrialized nations such as the United Kingdom, United States, and Australia, this love for animals manifests as the highest rates of companion animal ownership in the world, ranging from 47% of the UK population owning a companion animals to 67% of the US population. With increasing affluence, more nations are adopting the Western lifestyle and, along with it, are also welcoming companion animals into their homes and families.

The majority of companion animals live privileged lives. This, however, is not the case for the many more animals who are not so fortunate. Significantly larger numbers and species of animals experience extreme cruelty as a result of human actions, particularly those animals classified as "economic," whose use results in monetary gain. By far the largest category of "economic" animals is that comprising those animals used for food—agricultural animals. The irony is that it is in those countries where there are more companion animals that the diet comprises of more animal-based foods, (i.e., the Western diet). So, it is in those very nations where animals are welcomed into our lives, families, and homes and treated as nonhuman "people" where the largest numbers of nonhuman animals are forced to live short miserable lives in intensive factory farms, where their sentience and their capacity to suffer are largely denied in the interests of profits. This article discusses the psychological mechanisms that enable us to support and enable this scale of suffering while at the same time considering ourselves to be compassionate, empathic, and humane people who are kind to animals.

The cruelty involved in the abuse of "economic" animals is legal. Research informs us that legalized aggression is influential in the development of people's beliefs and values regarding acceptable behavior standards and ultimately on actual behavior. By conditioning our conscience to tolerate the killing and torturing of animals, killing and torturing in other forms become more acceptable. From the virtue perspective, the loss of com-

passion and the breeding of cruelty is a serious ethical concern (Chiu & Lin, 2009). It is noteworthy that violence toward other species, particularly in terms of consuming them, is also violence toward our very selves since by consuming animal-based foods, we are compromising our own health. Moreover, it is a lifestyle choice that is largely responsible for the damage we are inflicting upon the planet. It follows that if we cultivate a culture of compassion toward nonhuman animals, current and future generations will benefit through reduced antisocial and violent behavior toward all sentient beings and through markedly reduced damage to planet Earth and all of the life that it supports. Our bodies and our minds will also be significantly healthier as a consequence.

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