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Animals' Capability to Bond and the Implications that Follow

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Animals' Capability to Bond and the Implications that Follow

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Abstract

This paper explores the ways in which humans have historically viewed animals, with a focus on Descartes theory of *automata*. Further concepts of the problem of different minds, inherent value, empathy, love, friendship, grief, isolation, anthropomorphism, and biochemistry (focusing on oxytocin, cortisol and the prefrontal cortex) are all explored. Numerous literature reviews are used as examples to fight against the argument that animals are merely machines and can therefore be used and abused. Animal social bonds, including parent-child, purely social, and animal-human, are analyzed for their evolutionary and biological purposes in attempt to highlight the relationships that are not obviously valuable for survival. Inferences of bonds for pleasure, or love are therefore suggested. A social survey of 62 Pace University Honors College students analyzes human perception of 8 animals. The results suggest that the animals with whom humans spend the most positive interaction time with are those we, significantly, feel most capable of bonding, and seen in highest esteem. The results of the survey help to explore common misconceptions associated with animals. Reasoning behind these false beliefs is hypothesized.

INTRODUCTION

“Some people talk to animals. Not many listen though. That's the problem.”

— A.A. Milne

The importance of clearly representing the bonds between animals without obvious evolutionary purpose is to fight against the argument that animals are biologically-driven machines void of emotional lives and self-consciousness. Historically, animals have been seen as less capable than humans; Descartes proposed a theory of *Automata*: that animals are “reflex-driven machines, with no intellectual capacities”, and further argues that they have no state of consciousness (Allen, 2010) (Armstrong and Boztler, 2008). Under this theory, the economic exploitation of animals for human needs and pleasures is perfectly acceptable, because no suffering results from these actions. If animals existed under Descartes' theory, it would be no different than using cars or rocks, or other inanimate objects for our benefit. Animals were theorized to be machines with organs rather than metal gears (Armstrong and Botzler, 2008). These animal-machines were unique in an important way: They *seemed* like humans. Their body parts were reminiscent of what it looked like to be human, which prompted the need to further qualify Cartesian *Automata*. Descartes attempted to do so, and stated:

“On the other hand, if they were machines which bore a resemblance to our body and imitated our actions as far as it was morally possible to do so, we should always have two very certain tests by which to recognise that, for all that, they were not real men. The first is, that they could never use speech or other signs as we do when placing our thoughts on record for the benefit of others. For we can easily understand a machine's being constituted so that it can utter words, and even emit some responses to action on it: if in another part it may exclaim that it is being hurt, and so on. But it never happens that it arranges its speech in various ways, in order to reply appropriately to everything; that

may be said in its presence, as even the lowest of man can do. And the second difference is, that although machines can preform certain things as well or perhaps better than any of us do, they infallibly fall short in others, by the which means we may discover that they did not act from knowledge, but only from the disposition of their organs. For while reason is a universal instrument which can serve for all contingencies, these organs have need of some special adaption for every particular action. (Armstrong and Botlzer, 2008).

This suggests that due to an inability to communicate with humans, animals should not be held to a human standard. Because animals cannot verbally communicate that they suffer from human exploitations, the theory of *Automata* suggests that suffering does not exist whatsoever. Further, Descartes argued that an animal's actions could be explained in entirety by evolution, and if this was the case, then it was not a feeling and individually functioning being, but instead a machine. Does a being not suffer simply because it is incable of articulating distress? Further, if it can be suggested that animal's actions are not simply due to biology and evolutionary drives, does this work to disprove the theory of *automata*? In attempts to disprove this theory, literature and experiements are discused that illustrate bonds that show little or no evidence of evolutionary drive. If this is the case, animals do not fall into Descartes' own theory of *automata*, and animals' should not be considered machines.

Humanity's inability to communicate with an animal speaks to the problem of different minds (Farah, 2008). This theory suggests that it is small-minded to assume that because someone communicates differently that they are incapable of doing so at all. The problem of different minds "refers to the difficulty of knowing whether someone or something, other than oneself, has a mind." Both humans suffering from brain damage and non-human animals are prime examples offered for this theory (Farah, 2008). Why is it important to recognize that those

different than us still have capable, independent minds? Without this acknowledgment, there is no problem with continuing to treat animals as machines. The practices of wearing fur or leather, eating meat, hunting, unnecessary testing, frivolous entertainment etc. would all be considered acceptable according to Descartes automata; only when the problem of different minds is considered can animals' be given their own voice.

It is important to remember that recognizing a state of self-consciousness does not mean that animals function in the same way that humans do. The corresponding term *anthropomorphism* is defined as “The attribution of human motivation, characteristics, or behavior to nonhuman organisms or inanimate objects” (anthropomorphism, 2013). An example of the detrimental nature of this practice is the assumption that animals with upturned mouths, such as dolphins, are constantly happy because it appears that they are smiling (Tangley, 2001). While this makes the animal an appealing one to us, it can lead humans to believe that it is constantly happy, even when there is a significant stress level, presented in a heightened level of cortisol (a stress hormone) (Tangley, 2001). The problem of different minds insists that animals must not be held to human standards when being analyzed, but should instead be seen as a different entity (Farah, 2008).

While we may be genetically and physiologically different from other species, this difference should not be a passive invitation to see animals as less valuable. This propensity to equate species membership with lesser value is known as Speciesism, and has been equated to both sexism and racism (Kappeler, 1995). Nobel Prize winner Isaac Bashevis Singer stated “In their behavior toward creatures, all men are Nazis” (Berlin, 2013). While this is certainly a controversial statement, the comparison to not only anti-Semitism, but the horrific nature of the Nazi movement, supplies disturbing imagery and forces reflection on human treatment of

animals. This is not a comparison Singer would have taken likely, he himself was a victim, losing his family in Auschwitz. The mass genocide of World War II is seen as one of humanity's greatest tragedies, and yet in the last year an estimated 10 billion animals were slaughtered for food alone in just the United States (Farm Animal Statistics: Slaughter Totals, 2013). It is troublesome to consider that future generations may look at our treatment of animals with the same disgust that many currently feel toward the treatment of racial minorities, women, and those oppressed during the holocaust; as Mahatma Ghandhi stated "The greatness of a nation and its moral progress can be judged by the way its animals are treated." (Ghandhi, 2013). It is of great importance to acknowledge animal capabilities so that humans' cruelty toward animals may cease. Only when an animal is seen as a being deserving of humane treatment will he or she stop being tortured.

Both human and non-human animal brains have prefrontal cortexes (PFC). Animals that have PCFs include monkeys, cats, dogs, rats, mice, chickens, pigs, cows, fish, sheep, ducks, horses, octopi, squid, deer, bears, wolves, and all birds (Firestein, 2012). In addition to coordinating selective attention, task management, higher mental processes (this includes accessing numerous memory systems, directing attention, coordinating sensory and motor information, and modulating emotional states), most notably in humans, the PCF must be intact in order for humans to experience the emotional component of pain (Grandin and Deesing, 2002). This does not suggest that animals that do not possess a PCF, such as reptiles or insects, are incapable of feeling pain, but ones that *do* have a PCF are capable of both pain and *suffering*. Suffering differs from pain in that while pain is experienced as an immediate and short-term reaction or reflex, suffering is emotional, it is painful, it is prolonged and it is torturous (Armstrong & Botzler, 2008). Signs of suffering include when an "animal shows protective

behavior towards an injured part, such as limping after an injury to a leg, going off feed because of abdominal injury, or actively seeking relief from pain by ingesting both opiate and non-opiate analgesics, such responses can indicate that something more complex than a simple reflex is taking place". All mammals have been observed pain guarding after an injury (Grandin and Deesing, 2002). This suggests that animals are aware of what causes their suffering, and, further, they actively try to avoid suffering. Humans also have this habit, and "The ability to learn complex associations seems to be a prerequisite for "a human like" suffering to occur in other mammals." (Grandin and Deesing, 2002). If humans are capable of acknowledging what causes them to suffer, and they actively avoid this suffering, it is believed to be due to the PFC. It has been inferred that animals that have a PFC also have this ability. Utilitarianism suggests that if suffering occurs, the benefits must outweigh the negative results (Armstrong and Botlzer, 2008). Further, it should be noted that any being that is capable of suffering will attempt to avoid pain. Though the problem of different minds keeps us from being completely aware of how capable all animals, specifically those without a PFC, are of suffering, it is notable that suffering should never be caused without significant purpose. Unnecessary human pleasure is not grounds for animal suffering.

It is important to understand several hormones and how they affect animals. Cortisol, the stress hormone, has been known to cause detrimental health affects in humans, including "interfer[ence] with learning and memory, lower immune function and bone density, increase weight gain, blood pressure, cholesterol, heart disease". Chronic elevated cortisol levels are associated with a risk of mental illness, depression and lower life expectancy (Bergland, 2013). Animal brains produce the same hormone; further, when traces of cortisol are present, recognizable signs of distress are also present. (Cohen, 1992) (McLennan, 2011).

In addition to suffering and stress, animals also appear to be capable of love. The “love hormone” oxytocin is most notably released in mammals during childbirth (Feldman, Weller, Zagoory-Sharon & Levine, 2007). Behaviors associated with oxytocin include “proximity seeking, touch and contact. Additional maternal bonding behaviors in humans are gaze at the infant, “motherese” vocalizations, positive expression and adaptation to cues expressed by the infant.” (Feldman et al, 2007). These behaviors are believed to create a lasting bond with an infant, and also affect long term abilities involving cognition, neurobehavioral potential and social-emotional growth (Feldman et al, 2007). This hormone is believed to be so powerful that mothers with lower levels of oxytocin are at higher risk for postpartum depression (Goodman, 2011). In addition to mother-infant bonds, oxytocin is also present when some animals, such as humans and the prairie vole (to be further discussed in greater detail), engage in intercourse (Edwards & Self, 2006). The hormone acts in similar ways for these couples, creating a noticeable bond, and furthering monogamy in species that have higher levels of oxytocin (Edwards & Self, 2006). The mothers and couples display what humans would probably identify as love. If this is true, why is it not called love when addressing animals?

In order to further demonstrate animals' inherent value (a value that is natural, one that can not be reduced to a use, or value to others) (Regan, 1985), and that their lives must be better acknowledged and respected by humans, the language from this point forward will treat them as such. The remainder of this paper will employ gender-specific pronouns when discussing animals. This may create a level of discomfort, as it's difficult to refer to what (or who) you eat or what (who) you wear (fur, leather) as “he” or “she”, but using anything else would be hypocritical of the argument at hand. “It” makes it all too easy to forget that we're actually discussing living beings. Animals have minds, they have sexes and they have personalities, all of

which should and *will* be acknowledged throughout this work. In the same fashion, the terms “friend”, “best friend”, and “love” will not be presented in quotation marks when referring to animals. This is so that an animal’s emotional abilities are not downplayed as less valid than a human’s. While these language choices may seem odd, they are in effort to eliminate an assumption that humans are of greater value, or have a greater capability to bond with others. Through examining and analyzing the bonds of animals with their young, with other animals, and with humans, I wish to illustrate that animals are also higher functioning beings, capable of suffering, stress, grief, empathy and love, and therefore are innately valuable regardless of human perception.

Animals And Their Young

Females are not always involved in the rearing of their young. Some animals, such as several reptiles, may never see the female who laid their eggs (McCarthy, 1996). Mammals, on the other hand, tend to display an attachment to their young. Nowak et al. (2011) defines attachment as:

“a specific affectional relationship between two individuals that ensures over time

According to Cohen (11), the figure of attachment serves ‘a special psychological function for which others cannot substitute and that elicits affective and social responses that differ from those elicited by other figures’. Although this statement is issued from human studies, it applies to nonhuman species as well”

While humans are often seen as the most capable of bonding, it is interesting to explore the implication that animals are equally as capable. Animals can be observed protecting their young, playing with their young, feeding, nurturing, comforting, and bonding, and yet, this is called instinct while in humans it is called love (Feldman et al, 2007). The difference is that humans are able to vocalize their love for their child in a way that we, as other humans, can understand (McCarthy, 1996). Though humans may possess the same instinct, (after all, all mammals produces the same “love hormone”, oxytocin) the ability to state this in self-expression is what sets us apart. The problem of different minds does not suggest that animals are less capable than humans, but rather that we are unable to fully understand their bonds as we can a human's (Farah, 2008). This theory argues that an inability to communicate does not mean an inability to feel in the same, or similar ways.

There are other ways in which an animal's attachment to his or her offspring may be determined. Nowak et al.'s study helps to illustrate some of the 3 criteria that solidify the

evidence of bonds between ewes and lambs. When separated, both the mother and child show a strong motivation to reunite: an example of this is attempts to move toward one another when a partition is put in place (Nowak, Keller, & Levy, 2011) . This motivation is not as present with an alien partner. This suggests that it is not contact in general that the animal craves, but specific contact with either their mother or their child. Further, there is evidence that both lamb and ewe recognize one another very shortly after birth. These recognitions are displayed through familiar smell, auditory and visual cues, and continue long after birth. Finally, the pair spend a great deal of time together: Ewes are known to aggressively reject other lambs that attempt to nurse or socialize, yet they not only allow their own young to feed, but to rest along their bodies on a regular basis (Nowak et al, 2011). There is a significant contrast, the difference between denying basic human needs (food), and allowing what appears to be cuddling (that has no apparent biological need). This provides evidence that along with oxytocin release, mothers tend to show preference toward their young both in obviously evolutionary practices, such as feeding, but also in more subtle ways, such as physical affection. While these examples may seem basic, the comparisons to a human bond cannot be denied. We often infer that a human mother loves her child after observing such practices. If actions do not hold an obvious evolutionary purpose, yet they are carried out in what appears to be an affectionate manor it can be questioned if love, or a similar emotion, is also present for animals and their young.

Further, another way to analyze the parental bond is to remove the parental unit and then observe the child's reaction. Harry Harlow did just this: he conducted three similar studies with rhesus monkeys; infants were separated from their mothers, allowing researchers to observe the emotional effects of isolation (Schultheis, 1999). These abnormally-reared monkeys were seen to have problems including "fail[ing] to develop appropriate play, aggressive, sexual, and maternal

behaviors but instead exhibit[ing] self-directed abnormalities such as self-clasping, huddling, and stereotypic rocking behaviors.” (Suomi & Harlow, 1971). Further, when introduced to younger monkeys in attempt to rehabilitate the isolate reared monkeys, they were incapable of making a complete recovery (Suomi & Harlow, 1971). These monkeys were not left entirely on their own, but were offered two lifeless “mother” figures. This was due to Harlow and Suomi’s interest in analyzing an infant’s reaction to maternal comfort versus physical needs (Suomi & Harlow, 1971).

When presented with two alternatives to a live mother, the choice between emotional comfort and basic physical needs provides an interesting outcome. Instead of receiving nourishment from their mother, the monkeys were presented with two inanimate “mothers”: One made of wire, the other of cloth. The wire “mother” allowed the monkey to nurse from a rubber nipple (similar to that of a baby’s bottle), while the cloth “mother” did not provide any sustenance. If hungry, the monkey approached the wire “mother” first; however, the infant immediately transferred to the cloth “mother” when his feeding was complete. On average, the infant monkeys remained on the cloth monkey for a total of 17-18 hours, while spending less than one hour on the wire “mother” (Baker, 2010). The wire “mother” was necessary for survival in a concrete way, and yet the emotional comfort the cloth “monkey” provided was still seen as more desirable. Though it had nothing concrete to offer, the infants preferred a comforting touch over the biological need of food.

Not only was this preference displayed during times of rest, but it strengthened during times of distress. Harlow and Suomi (1971) developed an apparatus that had thrashing teeth, flailing arms, complacent eyes and loud sounds. When confronted with this contraption, the infant monkey retreated immediately. Instead of simply hiding anywhere, it consistently sought

comfort in the cloth “mother”; however, what is remarkable, is that instead of continuing to cower, the infant seemed to gather courage from her interaction with the cloth mother. After some time, the monkey removed herself from her “mother”’s body and threatens the object both vocally and with physical presence (Baker, 2010). This apparent mustering of strength was not replicated with the wire figure. When placed in an isolated room, either with no figure or with the wire “mother,” the monkey will remain insecure; he will display the actions of rocking, grasping or huddling (Suomi & Harlow, 1971) (Baker, 2010). This suggests that the lack of a mother figure keeps an infant from developing a healthy sense of the world around him.

However, if the cloth “mother” is re-presented, after some time of retreating to her, the baby acts autonomously and begins to explore the room with more confidence than previously displayed (Baker, 2010). The significant change in behavior proposes that mothers are important for more than just food supply. Maslow’s hierarchy of needs lists food as the most imperative, while the needs of love and belonging are not addressed until the middle of the pyramid (Burton, 2012) . However, what Harlow and Suomi’s study suggests is that while one can survive with just food, the monkey could not function properly or thrive. The infant monkey is only observed exploring her world when comforted by the cloth “mother. There appears to be more requirements than just survival in terms of evolutionary success. In the real world, if an abandoned infant received food while still remaining isolated, he or she would most likely die shortly after if they were to respond in similar ways as the infants observed in the above study (Suomi & Harlow, 1971). However, if a monkey were to be offered comfort, it can be hypothesized that it would develop confidence, as did the monkeys in Harlow and Suomi’s experiments (Baker, 2010).

When integrating into a new group, aggression is normally used as a test. Suomi and Harlow state, “they will typically attack any stranger monkey introduced to their social group,

and only if the stranger reciprocates the attack will it be “accepted” and mutual play follow.” (Suomi & Harlow, 1971). In order for the abandoned monkey to survive, it needs companions or caretakers; without the confidence provided by a mother figure it will be incapable of doing so. This aggression is not only about self-preservation in the form of protection, but self-preservation in the form of acceptance. The monkey who does not fight back will continue to be the victim of violence; “it is not surprising that isolate-reared subjects were consistently attacked when exposed to well-socialized peers, nor is it surprising that these isolates failed to exhibit significant social recovery.” (Suomi & Harlow, 1971). The bond is much more than enjoyment; it teaches and fosters young to mature and integrate successfully. It should be noted, however, that monkey intelligence is not necessarily compromised by their isolation. There is “little effect upon monkey learning capability” (Suomi & Harlow, 1971). The fact that they are still capable of mentally functioning, yet suffer so greatly and fail to survive, suggests that social capabilities, individually, are vital to the overall functioning of an animal. Even if they are able to learn how to function, the capability is not enough. This indicates that a monkey requires actual contact in order for it to be “normal” in function.

This doesn't stop with the infant monkey's individual survival. Even if she is able to live until maturity and reproduce, the inadequacies continue to present themselves. Not only are they presented with difficulties as a group member, but the struggle continues onward in attempts at motherhood. Mothers who were once infants in the isolate reared study were stated as either being negligent or abusive. Negligent mothers did not harm their young, however, they also failed to protect, nurse or comfort them. The abusive mothers violently injured or bit their young so severely that many of them died (Schultheis, 1999). After being raised without secure attachment, these same monkeys presented as poor mothers who continued the cycle of

inadequate rearing. The lack of proper upbringing does just not affect one generation, but goes on to the next. Even if the isolated monkey was able to function adequately enough to reproduce, the next generation was reared either abused or killed due to the mother's incompetency. A mother-child bond requires much more than birthing or feeding. Higher order mammals require nurturing, they require comfort and physical contact; if we were to observe this amount of attachment in humans, we would call it love. Why should there be a difference when observed in animals?

While it is easier to observe and analyze the results of isolation in a laboratory, this does not mean that all damaging affects of maternal deprivation are confined to clinical studies. Many accounts of distress are present in the natural world as well. As Uganda's elephant population has been threatened and reduced by approximately 90 percent over the past three decades, there have been more orphaned elephants than ever previously observed (Pacelle, 2011). The past decade has seen an increased number of violent attacks by elephants, though, curiously, the food supply in ratio to the elephant population has never been higher. Though previously believed that elephant attacks were motivated by food necessity, scientists began to ponder what else could be fueling these outbreaks. The effects of childhood trauma were proposed as potential causality for the observed brutality. It was discovered that the calves that had seen their parents or grandparents killed by poachers, thereafter showing signs of post traumatic stress disorder "well into their lives, if not forever" (Pacelle, 2011). The orphaned elephants had nightmares and were observed having trouble forming bonds with others (Pacelle, 2011). The elephants were not only acting aggressively toward humans, but they were documented stabbing and killing as many as 39 rhinos with their tusks; this was strange as elephants are a species that normally coexist peacefully unless provoked (Pacelle, 2011). The reputation that elephants "never forget" is

continuing to gain credibility: while it is unclear whether these elephants are acting out due to trauma or revenge, it is clear that their behaviors are significantly altered because they witnessed the death of their parents in years past. These animals were not just separated, but also witnessed the traumatic deaths of their loved ones. Because they were not infants at this time, they were able to continue onward without the direct care of a parent; however, like rhesus monkeys, just because they live on does not mean they are mentally healthy or stable.

Even children that lose their parents to natural causes at an older age can express profound levels of grief. Jane Goodall observed a male chimpanzee named Flint who was eight years old when his mother, Flo, died (Masson & McCarthy, 1996). After spending hours directly following her death tugging on her body, his health began to rapidly decline. A month later Flint was dead as well. It was believed that the psychological trauma created “physiological disturbances associated with loss” and that these symptoms “made him more vulnerable to disease”; in simpler terms, Goodall believes that Flint died from grief (Masson & McCarthy, 1996). Flo died naturally and left behind her young who, while understandably disheartened, had the skills to continue on without her. The intense mother-child bond, when broken, leaves behind inconsolable animals, just as it does humans. What does this say about animals? They experience grief even when it is not in their best interest. They experience grief even when it keeps them from moving on when they, evolutionarily speaking, have all of the tools to do so. They are capable of experiencing a loss so severe that they are emotionally, not physically, incapable of carrying on without their mother. This level of intensity is seen in humans, it appears we are not the only ones who feel this strongly about our loved ones.

It is not only the child that crumbles when they experience loss; a parent will react similarly. Dairy cows are separated from their calves as quickly as two hours after giving birth.

For days, or even weeks after the separation a bellowing will be heard. Notably, for each birth a cow will have higher levels of oxytocin than the previous birth. This suggests that each time a cow gives birth, the bond formed is stronger than the last, making it increasingly difficult for her to be separated (Taylor, 2013). Elephants, just like their young, also experience grief when they are confronted with death. Some have been observed to carry their dead young for days, unwilling to part with them (Masson & McCarthy, 1995). Fathers in zebra herds have shown signs of distress when experiencing a child's loss. After the death of his four and a half year old son, one stallion was observed roaming for hours calling for him, after initially attempting to rouse his body (Masson & McCarthy, 1995). Parents, even the animal kind, are not machines meant for repopulation. While it can be argued that attachment is an evolutionary practice required for appropriate rearing, it is not as clear what the evolutionary function of grief is. If animals were truly machines, it can be argued that the loss of young would be immediately followed by the desire to procreate. However, numerous animals "waste" a significant amount of time mourning their previous child for this to occur. A machine would not focus on the loss, only the desired result. Animals are not machines, but rather social individuals that can reason, think, feel, bond, grieve, and evidently express emotions equivalent to what we as humans would call love.

Social Bonds

While the concept of child rearing and the connection between parent and child may be obvious in its evolutionary and social benefits, a different type of bond between animals may seem more foreign. Animals may be capable of caring for others outside of this relationship.

Lifelong monogamy is found in approximately 3-5% of species, one example is the prairie vole (Edwards & Self, 2006). Coincidentally, the prairie vole's brain produces more oxytocin and vasopressin in the regions that release dopamine and serotonin (Pacelle, 2011). These animals have been referred to as "addicted to love", while it actually seems as though they are addicted to sex: Prairie voles have been observed, after 24 hours, to prefer side-by-side contact with their preferred partner over other female prairie voles; this is how a paired bond is often acknowledged as being established. However, if males are placed with females but not allowed to copulate they will show no preference toward the female compared to an unknown female (Edwards & Self, 2006). The reason for this distinguished difference is believed to be that these "love hormones" are released during intercourse, and without this act the formation of a strong bond is not observed. This was tested when Aragona and colleagues infused D2 receptors in the male prairie vole before interaction with a potential mate. With this manipulation, the pair was able to form a preferred preference with one another even without the incorporation of sex (Edwards & Self, 2006). This suggests that it is not the actual act that creates a bonding effect, but the oxytocin that is released as a result. If a prairie vole feels these emotions while mating they are used as positive reinforcement for reproducing. Operant conditioning suggests that if an action results in a desirable outcome it is likely to be repeated (McLeod, 2007). This is essentially biochemistry telling a prairie vole to continue repopulating the species. Evolution is working in its favor: the more it acts to reproduce the happier and more in love it will feel. This

begs the question of whether mates are truly companions by social bond or because they are controlled by their biological and evolutionary drives. Is the love hormone's presence necessary for pairing, or is this simply one understanding of a bigger picture?

Homosexuality, by its very definition, plays a less obvious role in reproduction and the furthering of a species, and yet it is found in over 1,500 unique species (1,500 Animal Species Practice Homosexuality, 2006). There have been many speculations as to why this exists. There have been proposals of social compensation; this states that animals turn to homosexuality only when in a same-sex population, unable to form heterosexual relationships (Hunter, 1994). While this may sometimes be the case, it is ignoring the times in which homosexuality occurs while in mixed-sex company. The social-compensation theory is discredited with the knowledge that species like pigeons and Japanese macaques have been observed in same-sex couples while in mixed-sex company. This is not a rarely observed occurrence, but instead is so wide spread that it has been stated "To turn the approach on its head: No species has been found in which homosexual behavior has not been shown to exist, with the exception of species that never have sex at all" (Medical Science News, 2006). In sharp contrast with the prairie vole, whose companionship can be theorized to be due to an evolutionary drive, the homosexual animal does not further its species in its preferred pair. However, while some females may be impregnated, they still revert back to their same-sex partnership. In fact one in every ten black-headed gulls is a female pair. It is argued that while they may have heterosexual sex for the purpose for reproduction, it is not enough of an argument for the animal to be referred to as bisexual by a human standard. "If a female has sex with a male one time, but thousands of times with another female, is she bisexual or homosexual?" (Medical Science News, 2006). Surely if someone were to make the same choice over and over again, thousands of times, it would dictate a clear

preference, even if they veered from their preference on a rare occasion. This is especially true if the less frequent behavior serves a significant purpose. Women have been observed to experience intense pain while giving birth, and yet they continue to do so knowing their young are brought about through this action. An animal that does not desire to engage in heterosexual intercourse may still be willing to do so for its biological benefits of reproducing. An animal can therefore have a biological drive to continue populating their species independent of their choice of desired partner.

It is beneficial to the species as a whole for individuals to care for others, even in non-romantic ways. Species from bats to monkeys have been known to share food with others. Jonathan Balcombe has observed vampire bats that share their own food with those who are sick or nursing (Pacelle, 2011). Capuchin monkeys have also been observed choosing to share. When given the option of either choosing a token that only gave themselves treats, or a token that gave themselves and another treats, they consistently choose to share under the condition that the reward was equal and the partner was familiar and visible (Pacelle, 2011). Further studies with Capuchin monkeys have observed what will happen when they are separated by mesh cages and fed at different times. The monkeys will frequently either drop food by the other's end so it's in easy access to the monkey without food; they even on occasion will actually transfer their food from hand to hand (Waal, 1997). While on a selfish level it is most rewarding to keep feedings for oneself, it is in the species best interest to share. Empathy and altruism have an evolutionary purpose for some species. Just because something is evolutionarily rooted, does this mean that the animals don't feel? Humans secrete oxytocin, the "love hormone" just as animals do, we choose to share with those in need, and yet we see our own emotions as more genuine than

their's. Biological coding should not discredit bonds in animals, in the same way that it does not discredit human emotion.

In the same way that some young require the nurturing of their mother, some animals require social interaction in order to remain healthy and functional. While it is known that isolation at birth is detrimental (Suomi & Harlow, 1971), fewer studies explore the consequences of isolation in adulthood. Social isolation has been found to affect the behavior of adult rats in as few as 21 days (Raz & Berger, 2010). After a week of being housed with 5 other adult mice, three control groups were formed to evaluate the affects of social isolation in regard to morphine intake. Rats were either isolated (though they could still see and hear other rats), in a group with one other same-sex rat, or isolated with the exception of one hour every day during which time they were exposed to one other same-sex rat. While it was already known that isolation in rats increased aggression, ability to perform in cooperative tasks, irritability, hypersensitivity, anxiety and depressive-like behavior (Raz & Berger, 2010) it was unknown if adult rats would be as susceptible to isolation as their newborn counterparts were. This study measured their influence by morphine intake. Just as humans may turn to drug abuse in times of strife, rats were being observed to determine if self-medicating would occur when in distress. After only 21 days, the rats that had been socially isolated showed a significant increase in their morphine intake compared to the rats that had been allowed social interaction. It was also discovered that the exposure to another rat for only one hour every day reversed the increase in morphine intake in the otherwise isolated rats (Raz & Berger, 2010). Not only will the increase in morphine cease when reunited, but, when rats are exposed to one another and are allowed to play and interact, they will also display an increased level of dopamine, which is biochemical evidence of happiness (Pacelle, 2011). Neuroscientist Jaak Panksepp has found that most other mammals

have similar neural reactions, and that pain-relief drugs tend to have the same effects on them that they do on ourselves (Pacelle, 2011). Therefore, a rat's increase in morphine use or abuse can be interpreted in the same way that a human's self-medicated increase in morphine would be analyzed.

Without social interaction rats will cease to continue functioning normally. This does not stop when they have reached sexual maturity. Interacting with others is vitally important to their well-being. Without this exposure, they not only become aggressive, hostile and show signs of anxiety and depressive behaviors, but they also become self-medicating, essentially threatening their own well being with drug abuse. An isolated rat is a rat that fails to function successfully. An isolated rat fails the furthering of its own species. Being cut off from others obviously prevents reproduction, but it also creates suffering on an individual level.

While some may be positively influenced by social interaction from an evolutionary standpoint, there comes a question of when social demand begins to negatively affect a species' ability to thrive. Psychologist Dr. Sheldon Cohen studied the immune systems of adult male macaques, not based on isolation, but based on stability of social groups. For 14 consecutive months, 43 monkeys remained in unchanging groups of four or five. After this, the monkeys were split into two conditions for the next 26 months; they either remained in an unchanging social group or were in a group that changed monthly. These groups switched out three or four monkeys to consistently keep them in contact with strangers (Cohen, 1992). The previously healthy monkeys that were subject to changing groups now displayed weaker white blood cells, even three weeks after the study was completed (Cohen, 1992). This drop in immunity suggests not only that social isolation is harmful to animals, but that social unrest is as well. While helping others with food and working together may make evolutionary sense (in that it keeps

more of the species alive), having an immune system suffer while still surrounded by others seems to predict harm rather than good. The macaques in constantly changing groups were observed grooming and engaging in “friendly” touch behaviors more frequently than the stable groups, and this was believed to be an over-compensation for the experienced social stress. However, while the lowered white blood cells were most present in unstable groups who didn’t participate in “affiliative gestures,” the lowered immune system was significant in the group as a whole (Cohen, 1992). This suggests that while social bonds may be of great importance, they are not something that can be faked. A true bond, rather than one fostered in overcompensation, is the one that helps to avoid detrimental health.

Such a high demand of social success seems to set the macaques up for failure. It would make sense, from an evolutionary standpoint, to adapt and become acquainted with the new members of the group, instead of continuing to suffer. If the purpose of a group is strength in numbers for acquiring food, protection from predators, and the ability to procreate, an unfamiliar group suddenly strung together should still be capable of all of these things. This suggests that the heightened stress and therefore lower immune system may be a product of something more complex than survival. The groups that remained unchanged for over 2 years had time to grow familiar with one another; they had time to create bonds and social order. Just as the unstable group needed to overcompensate with constant touching and grooming, it can be inferred that the stable group did not require such attentiveness because they were confident in their place in the group. This suggests that it is not proximity that benefits an animal, but the bonds created within that group.

Primates are not the only animals that create such specific social bonds with others. Cows have been known to have best friends. The heart rates and cortisol levels of cows were measured

in isolation, when paired with their usual companion, and also when paired with an unfamiliar cow. Heart rates and stress levels were significantly reduced when with a preferred partner compared to when cows were placed with an unfamiliar cow (McLennan, 2008). This seems to put a cow, and any species that reacts this way, at a disadvantage: Instead of relying on a group for survival needs, cows and monkeys rely on a select few, or even one specific companion for social comfort. These two species do not seem to be the only ones. After nine years with no pregnancies, a group of two female giraffes had their male counterpart removed; the Atlanta Zoo had come to the conclusion that breeding was not possible. The zoo was therefore shocked to observe the animals that weren't supposed to be a species with notable social bonds reacting so poorly. They had consulted with Dr. Meredith Bashaw who had observed giraffes in Africa for years and stated "Giraffes just seemed to move about the plains of Africa like random molecules in your coffee cup," she claimed they did so without care for what the others were doing. This is why it came as a shock when the two females were observed pacing, licking the fence in an obsessive manner, and displaying signs of distress (Milius, 2003). These animals had no reliance on one another; they received all food and caretaking from the zoo staff. They could not breed with one another and fulfill a need to replenish the species. Further, they were not isolated without the male and still had companionship within each other. Social comfort seeps into both mental health and physical health. It puts not only abstract concepts such as happiness at stake, but also more concrete concepts such as heart health, stress levels, and immune system functioning. Such a heavy reliance on a small pool of individuals does not seem evolutionarily wise. Therefore, perhaps these closer bonds are not the work of evolutionary instincts. Perhaps this is proof that animals work toward more than simply survival. They crave happiness and companionship.

Some animals not only engage in social relationships for pleasure, but actually take on relationships that have evolutionary harm. Elephants, in particular, have been known to express such intense grief that it conflicts with their lives (Masson & McCarthy, 1995). One African herd has been observed traveling particularly slowly because one of their members never recovered from a broken leg from years past. A distressed mother was observed continuing to carry her several-days-dead calf, only putting her down to eat or drink. Her entire herd was observed matching her pace to accommodate for her slower rate (Masson & McCarthy, 1995). Instead of taking a Darwinian approach and allowing the weakest to be weeded out, the entire herd made themselves more vulnerable by slowing down. Masson & McCarthy states "This suggests that animals, like people, act on feelings as such, rather than solely for purposes of survival. It suggests that the evolutionary approach is no more adequate to explain animal feelings than human ones." Such displays of empathy showcase that sometimes a bond is valued above one's own wellbeing, or even the wellbeing of the group or species. Placing one's "heart" above their "head" is often seen as irrational, but is understood because the relationships are of immense value. Elephants display that seemingly senseless behavior in favor of loved ones is not exclusive to humans.

While elephants are still helping other elephants, interspecies bonds are the ultimate example of social relationships without evolutionary purposes. If an animal is being assisted and its survival does not even mean the survival of the benevolent animal's, then it is suggested to be based on bond and not based on evolutionary purposes. This is demonstrated in the story of an elephant, Tarra, and a small dog, Bella. They both resided in an elephant sanctuary in Tennessee, and although there were other elephants present, Bella was Tarra's companion of choice. After suffering an injury, Bella had to remain in an office for three weeks; for the entirety of those

three weeks, Tarra chose to stay close, even with twenty two hundred acres to roam. Tarra's dedication did not stop there: Bella died in what appeared to be a coyote attack, but when her body was discovered there was no sign of an attack nearby. It is believed that Tarra moved Bella after discovering her, perhaps a mile or more, to bury her under twigs and leaves bringing her close to home (Hartman, 2011). Burials are typical elephant grieving behavior (Masson & McCarthy, 1995). Tarra demonstrated typical elephant behavior; in the wild they have been noted to stand over a deceased herd member for days. This may include guarding the body from predators, and even holding the dead body trunk to trunk or trunk to tusk. The elephant demonstrated grief at this loss. Refusing to carry on could potentially mean life and death in the wild, and yet, the decision to remain speaks a great deal to an elephants' dedication despite its evolutionary motives. Tarra's treatment of Bella demonstrates that bonds are not limited by an animal's species, and that there is more significance to bonds than evolution.

If there is no evolutionary basis to Tarra's, and other previously mentioned animals' actions, then what is the explanation? In humans this would point toward a significant social bond. It should not be disputed in animals simply because it is normally seen as a human quality. It appears as though we are not the only animals capable of bonding, capable of love, a love that cannot be explained through an evolutionary or biological basis.

Animals & Humans

It comes as no surprise that when attempting to find studies of animals and humans bonding that a majority of the search results present cases with dogs. Dog has been bred to be “man’s best friend”: animals that humans have chosen to domesticate are not surprisingly the ones that we have most closely bonded with. It may seem odd that the species we have the closest bonds with is not one that we are closely related to, such as the great ape. One could predict that due to our close genetic nature that a great ape would be the animal we are most capable of bonding and communicating with, and yet this does not seem to be the case. While primates are known to be more intelligent than canines (Borenstein, 2012), when it comes to humans, dogs appear to have more insight. This is likely due to the mass amounts of exposure humans and dogs have to one another, as opposed to the limited amount of time primates and humans spend together (Nagasawa et al, 2009; Bräur, 2011).

Dogs have the ability to not only understand their own species’ social cues, but our social cues as well. Pointing may be interpreted as a rude gesture in some countries (when directed at a person), but still appears to be something that is cross-culturally understood (Cotton, 2013). Because it appears in multiple, unrelated, areas, it can then be inferred that pointing is not a societal gesture, but instead an innately human one. It appears that while some cultures may take the gesture offensively, most acknowledge that a pointed finger at an *object*, not a person means “it’s over there” or “watch this” (Finger Gesture Guide, 2012). This is why it may come as a surprise to learn that while primates do not respond with understanding, dogs will (Nagasawa, Mogi, & Kikusui, 2009) (Bräur, 2011). Wolves were also incapable of interpreting a pointing gesture (Nagasawa et al, 2009). This implies that the dog was not originally capable of such understanding, but that in the approximately 14,000 years that humans have domesticated dogs

(Nagasawa et al, 2009) they have adapted to us, and thus developed new “human” based skills. However, this is by no means a skill that requires training today. When testing the cognitive understanding of pointing, the sample population used was “normal family dogs” that were only on the premises for one or two hours (Bräur, 2011). This suggests that the only “training” the dogs may have received in regards to pointing would be observation of their owner(s). Yet, without coaching they were able to accurately choose which overturned cup contained food when a human pointed it at.

To further dispute that the dogs were more capable because they lived with humans while apes do not, a follow up study was also conducted. This study had the same set-up: two identical overturned cups with food under one of them (that could not be detected by scent) were placed in front of a human. The human then points to the cup with the food underneath it, and the animal at hand is observed in whether or not this physical cue is sufficient information to decipher which cup is the desired one (Bräur, 2011). In attempts to correct error in regard to overexposure to humans, 6-week-old puppies were brought in. With insufficient time to be properly trained at such a tender age, the ability to interpret pointing speaks more to their born-with, natural abilities. Amazingly, even the young puppies were able to understand the pointing gesture and choose the right cup (Bräur, 2011). This suggests that the accurate interpretation of human cues are no longer trained, but innately understood and is a skill present shortly, if not immediately after birth.

This understanding goes so deep as to allow flexibility within these signals. Not only will a dog respond to a point, but they will also react to a wooden marker placed on the cup, or even something as subtle as someone glancing at the cup, when the human involved in the testing does not even move his or her head (Bräur, 2011). This flexibility and sensitivity to human movement

is further stressed with remarkable insight. Dogs seem to be aware of when a human's vision is compromised, even if their own is not. This suggests that they are not only self-aware beings, but capable of looking at a situation through someone else's lense, even if that being is not of the same species. This is highly advanced and something that is normally thought of as a human skill; dogs express not only impressive cognitive skills, but it seems as though a type empathy must be employed (they seem to understand another being's limitations as if they, themselves were the ones being affected) for this to be possible. Dogs in this study were capable of understanding when a human couldn't see in multiple situations. When commanded to bring a toy, when one was in eye line of the human, and the other was not (though the dog could see both), the toy within eyesight of the human was always the one retrieved. In addition, when commanded to not eat a treat, dogs that had demonstrated they were fully capable of complying would still be observed eating the treats when the human at hand was blindfolded, had their eyes shut, or appeared to be distracted (Bräur, 2011). This study suggests that dogs are not blind followers, but instead are aware of when commands are beneficial to them, and when they can get away with breaking the rules, by understanding a human's abilities.

What does this mean for the human/canine bond? This provides evidence for the argument that throughout the process of becoming domesticated, dogs didn't simply become more docile than their wolf counterparts, but that they also became more sensitive and accustomed to the ways in which humans communicate. This understanding of something labeled as human behavior speaks to why we consider the dog "man's best friend,": we created him to be just that. And just as ewes discriminate between their own lamb and unrelated young (Nowak, 2011), and cows can decipher who their best friends are (McLennan, 2008), dogs are capable of identifying humans with whom they are bonded (Nagasawa et al, 2009). Just as with

pointing, while dogs responded differently to strangers, hand-reared wolves showed no differentiation (Nagasawa et al, 2009). While this is not proof that the wolf is incapable of deciphering one human from the other, it implies that while they may have been raised by specific humans, they display no significant bond toward them. The dog not only differentiated, but displayed emotional responses when reunited with their owner. Wolves and dogs further demonstrate their differences when problem solving. When faced with a dilemma, dogs were observed to immediately look to their owner for help, in contrast, wolves chose to problem solve without human assistance (Nagasawa et al, 2009). While biochemical responses, such as oxytocin and cortisol, may be present and cause the same or similar responses amongst mammals, this is strong evidence that while humans may feel a bond toward a wide array of animals, only a small few are capable of feeling anything toward us. In truth, while there are believed 8.7 million species of animals (Zimmer, 2011), humans have domesticated a mere 20, with archeological evidence pointing to the dog being the first (Nagasawa et al, 2009).

If most animals seem incapable or uninterested in bonding with humans, then why do we harbor such fascination with them? Many believe that a select group of animals, such as puppies or kittens, are cute and lovable, and yet we rarely explore why this is. So while many frequently fawn over fluffy baby animals without questioning why, there is theory that may explain our emotional fascination. It is suggested that the animals we find most appealing to look at are those that actually resemble our own offspring. Animals that we find cute: rabbits, dogs, cats, and other babies, most notably mammals (because the list of animals humans find cute is endless), “have relatively bigger and rounder heads, and bigger eyes, than do adults—as, of course, do human babies” (Why Are Animals Cute?, 2010). It is beneficial, and sometimes necessary, for parents to care for their young, this is made more likely if the young is visually appealing or

fascinating to the parental figures. We, as humans, are not the only ones to fall prey to the subjective cuteness of baby animals: “Humans and other mammals seem to have an innate baby schema, an attraction to infant cues like large, wide-set eyes, a button nose and a mouth set low in the face, and the universality of these cues explains why mother dogs have been known to nurse kittens, lionesses to take care of antelope kids.” (Angier, 2010). This can explain not only our attraction to these animals, but the desire to have them as our own. If biologically we are hardwired to see many young, domesticated animals (in addition to other non-domesticated animals) in the same light that we do human infants, then we are predetermined to want to nurture them. In today’s society this translates to taking them in as pets. Regardless of potential indifference on the animal’s side, humans have taken a fascination with “cute” animals, and desire to make them our own, because on a basic level we see them as we do our children. This concept is far from new, citing as far back as the bible, that speaks of an impoverished man who took in a lamb who “drank of his own cup, and lay in his bosom, and was unto him daughter” (Pacelle, 2011). Pets have long served a significant purpose for those with an inability to nurture their own children, such as the poor man discussed in the bible, or those that find themselves removed from nature. While a great number of people lived rurally in the past, with the shift to urbanization it is proposed that humans have developed “nature-deficit disorder”, and that keeping pets has helped to fulfill “a basic impulse to be close to other creatures” (Pacelle, 2011). Yet, humans do not desire closeness with all types of animals.

In fact, both sides of this argument rest a great deal in anthropomorphism (looking at animal’s looks, behaviors etc. through a human lenses) (Pacelle, 2011). Humans judge what is or is not attractive, especially with those animals that possess human features and expressions. While we commonly identify elephants or jellyfish (more foreign looking animals) as majestic or

full of wonder, other animals that more closely resemble humans are judged more harshly. The male elephant seal or male proboscis monkey, who have similar trunk-like structures to the elephant are examples of this; they are not referred to as exotic or beautiful. Some find their long, pendulous, noses comical, while others claim to find them ugly or disturbing. It is believed that they are more harshly criticized because we are judging them by a human standard, not an animals' (Angier, 2010). Humans often have difficult times separating our beliefs about ourselves from our beliefs about animals.

These shortcomings are not only in terms of how we see them physically, but how we use them for our own emotional needs. Owning a pet provides both physical and emotional benefits, such as an increased amount of exercise, greater social interactions, release of oxytocin, decreased stress, loneliness, depression, and rate of heart attacks (Netting, Wilson & New, 1987) (Punt, 2012). After allowing time to pet and play with their canine companions a spike in oxytocin was observed not only in humans, but in their dogs as well (Punt, 2012). This study suggests that not only are dogs capable of understanding humans, but they too may feel the strong bond to which many pet owners have spoken. While dogs may feel a close bond to their owners, different results may be present when constantly exposed to strangers. Even more than simply owning a dog, many humans benefit from animal assisted therapy. While this practice is rapidly gaining popularity and merit, is early as 1792, Quakers treated the "insane" humanely and had courtyards with small animals and birds for whom they could care for (Netting et al, 1987). Today, animals help fight loneliness for those residing in long-term care facilities (Banks and Banks, 2005), they have been prescribed as companion animals by physicians; guide dogs, hearing dogs, handling dogs (usually for people in wheelchairs) and allergy dogs have been long accepted in practice, programs for children with autism have been sprouting up rapidly and

therapy dogs often make day trips to a variety of places from libraries where they help children feel more confident reading, to hospitals visiting the sick or elderly (Netting et al, 1987). It goes without saying that humans' lives are vastly improved by an animal's involvement, more specifically a dog's.

With time, humans have found extensive ways in which we can benefit from our bonds with animals. However, while numerous studies have been conducted and endless articles have been written on human benefits from animal assisted therapy, it is difficult to find any literature from the dog's perspective. While we claim the canine is "man's best friend", very little concern seems to be taken for their end of the bargain. We claim to hold dogs and other animals that have literally helped save lives in such high esteem, and yet their own needs have not been addressed. It is not a question of whether they have been fulfilled or not (for all we know, they could be well adjusted and healthy), but that we don't even have easily accessible knowledge of what these needs would be. There are articles meant to be informative about the dogs that include generic statements like "A therapy dog is a friend to everyone!" (Therapy Dogs United, 2013) and "Therapy Dogs must: Love to cheer others up!" (What is a "Therapy Dog"?, 2013). These washed out statements speak to why they help us, with generalizations that could not likely apply to every dog. If people continue to believe that the dogs want to help us without any proof to back this up, then we are abusing whom we claim to be our best friend, taking from them without questioning the consequences. As much interest as we take in animals interacting with one another, and for our own benefit, it is surprising that this is a field with very little to no research.

METHOD

Perhaps our familiarity and personal perception of animals predicts how capable humans believe them to be. A sample population of 62 was surveyed between the dates of 11/22/13 and 11/24/13; the sample consisted entirely of Pace University Honors College students. The survey was administered electronically through email, and the participants responded on a voluntary basis. They were informed the survey was anonymous, confidential, and would assist in analyzing the social assumptions that humans made regarding animal abilities, behaviors and emotions. Each set of questions were asked in reference to one specific animal at a time, a picture of the animal was provided for reference. The list of animals, in the following order was: dog, primate, prairie vole, pig, dolphin, elephant, pigeon, and alligator. The images were all approximately the same size. The animal was pictured in full body, alone, on grassy terrain (with exception of the dolphin), and facing the camera without making eye contact. The uniform nature of these images was an attempt to offer the participants a blank slate, so that they could place their own perceptions onto the animals. Ideally, no one animal stood out, based solely on their picture, as attempting to connect with the sample population. After viewing an individual image, the sample population was asked to write one sentence, explaining their immediate reaction to the pictured animal. Following this request, the participants were presented with a series of 6 statements and asked to rate them on a likert scale of 5 (ranging between 1: strongly disagree, 2: disagree, 3: neither agree or disagree, 4: agree, and 5: strongly agree). The 6 statements were as follows: "I would like to have this animal as a pet", "I'm afraid of this animal", "I think of this animal as intelligent", "I believe this animal is capable of creating bonds with their young", "I believe this animal is capable of creating bonds with other animals or humans", and "I think this animal is capable of pleasure and suffering". All scores were analyzed in Microsoft Excel, where

the answer “Strongly Disagree” was assigned a value of 1, “Disagree” was assigned a value of 2, “Neither Agree or Disagree” was assigned a value of 3, “Agree” was assigned a value of 4, and “Strongly Agree” was assigned a value of 5. The final results ranked dogs as the most desired pet, with a mean of 4.31; alligators were ranked as the least desired pet, with a mean of 1.08. Alligators were the most feared with a mean of 4.4 and dogs were the least feared, with a mean of 1.27. Dolphins were believed to be the most intelligent with a mean of 4.82; pigeons were believed to be the least intelligent with a mean of 2.56. Primates were believed to be the most capable of bonding with their young, their mean was 4.76, and pigeons were believed to be the least capable of bonding with their young with a mean of 3.55. Participants believed dogs were the most capable of bonding with other animals or humans with a mean of 4.77; alligators were ranked as the least capable with a mean of 2.9. Elephants and primates were believed to be equally capable of pleasure and suffering with a mean of 4.81, the pigeon was believed to be the least capable of pleasure and suffering with a mean of 4.24.

It is notable that in almost every category that it is possible (question one is purely opinion based), there is a misconception. There is however, hypothesized reasoning behind why each of these was ranked, even if it was done incorrectly. Dogs were ranked as the least feared. Out of all 62 responses, all but two responses were either “strongly disagree” or “disagree” when the statement was “I am afraid of this animal”. One response was “neither agree or disagree” and the other was “agree”. The response of “agree” is assigned a score of 4, this is 4.73 standard deviations (standard deviation for this statement was valued at .58) away from the mean response of 1.27 (which is equivalent to a response between strongly disagree and disagree, veering toward strongly disagree) and therefore highly significantly different. This respondent wrote, “Dogs are lovable creatures, but mostly they scare me”. He or she also agreed or strongly agreed

with the statements claiming the dog was intelligent, capable of creating bonds, and capable of suffering and pleasure. What's interesting is that while the participant feared the dog, they seemed to internally attribute this fear, as opposed to believing the dog's actions, an external factor, caused this belief. Though only 1 out of 62 were fearful, out of the entire list of animals offered, dogs were the most likely to cause death in the United States (Human deaths in the U.S. caused by Animals, 2008). Of the three animals on both the survey and the list, dogs were responsible for 31 deaths in 2008, elephants were responsible for an average .25 deaths, and alligators were responsible for .3 (Human deaths in the U.S. caused by Animals, 2008). Only the deaths due to alligators were the result of wild animals. This suggests that the deaths caused by both the dogs and elephants were because humans were putting themselves in unsafe situations, as opposed to potentially being confronted without control. Being that in America dogs are the most dangerous animal on the survey in terms of annual deaths, it is interesting that dogs received responses such as "this is a sweet dog who will protect you", while the overall consensus of the alligator was that "this animal terrifies me" and "[I] hate reptiles, kind of creepy". These were both typical responses. The one person who feared dogs responded in a way that suggested they felt this to be their own judgment, not the shortcomings of the animal. Only four of the 62 respondents disagreed with the statement that alligators were frightening, the overall consensus resulted in a mean of 4.40 which represents an almost equal placement between agree and strongly agree with the statement "I'm afraid of this animal". The person who feared dogs is an outlier; those who *don't* fear alligators are outliers.

The lack of fear most likely comes from the association with dogs as pets, and dogs as capable of bonding with humans. The average means for questions 4 and 5 (capability to bond with their young, and capability to bond with humans and others respectively) showed that the

participants believed dogs were more capable of bonding with humans (a mean of 4.77) than they were with their own young (a mean of 4.63). This speaks to how greatly we as humans feel we bond with our canine companions. Though they were not believed to be the most intelligent, or most capable of pleasure or suffering, these are still the animals that were stated as most closely bonded to ourselves, as well as the animals we most want to keep as pets.

Why is it that the animal that (out of the list presented) that ranks as the biggest threat to humans (Human deaths in the U.S. caused by Animals, 2008), is less capable of suffering and pleasure, (Firestein, 2012), and one of the least intelligent (The 10 Most Intelligent Animals, 2012) (Wright, 2005)? Looking at responses, the average sentence or statement looked like the following examples: “Upon seeing this image, I have a feeling of warmth and happiness, followed by calmness and relaxation”, “This is a fluffy, loving family member”, and “It needs to be cuddled and I am going to be the one to do it.”. This speaks a great deal to how we perceive dogs. As discussed earlier, dogs provide a great deal of services for humans, such as lowering stress levels and raising oxytocin levels (Netting et al, 1987) (Punt, 2012); this can be attested to in the respondents' claim of happiness, warmth, calmness, and relaxation. Merely the thought of a dog was stated to create multiple positive human reactions. Several respondents touched on another significant component; dogs aren't necessarily seen as the “other”. Multiple participants, such as the one quoted above, see the dog as a family member, as opposed to a pet. This perception suggests that while they may not be seen as the brightest or most capable of pleasure and suffering, they are seen as the most close to us on a personal level, even trumping our own biological “family”. While an example for some statements regarding primates included “They are very human like”, little warmth was incorporated into such statements, as was obvious when speaking to the dog.


It is notable that the animals with whom we are most familiar with received the strongest views; the opposite was also true. A theory as to why pigeons were criticized so harshly is due to the residence of the sample population, which is primarily, if not entirely, in New York City. They were believed to be the least intelligent, least capable of bonding with their young, and least capable of pleasure and suffering. Despite these popular beliefs, pigeons were actually in the top ten most intelligent animals; the prairie vole and alligator didn't make the list (10 Most Intelligent Animals, 2012). A more common take on pigeons was that they were "flying city rat[s] that spread diseases" and more insightfully, that "it's hard to tell a bird's emotions". This suggests the problem of different minds (Armstrong & Botzler, 1993). Because pigeons don't look like humans, we assume they are not capable of human emotions as a primate, or even dog would be. This is most likely a cultural practice as well. As residents of New York City, pigeons are often looked down upon as dirty, "flying city rat[s]". It would be interesting to see the perception of pigeons where they are less populous. Further, one participant who stated "My grandpa had pigeons." believed that they were significantly more intelligent than the mean. While the mean was 2.56 (about halfway between Disagree and Neither Agree or Disagree) this respondent strongly agreed with the statement claiming, "I think of this animal as intelligent" giving them a numerical score of 5. This creates a difference of 2.18 standard deviations (one standard deviation is 1.11), making the response significantly greater than the average populations belief about a pigeons' intelligence. It can be suggested that because of this person's personal experience, they were able to draw their own, more accurate, conclusion as opposed to following the inaccurate societal norm. If extended exposure in a positive social setting helps to increase the perception of intelligence, this may speak to why dogs scored so positively on multiple statements.

An animal that seemed to suffer the opposite problem from the pigeon was the prairie vole. Studies have shown that prairie voles produce significantly larger amount of oxytocin compared to other animals; this knowledge suggests the reasoning behind their monogamous nature (Edwards & Self, 2006). While this is the case, it seems as though the animal is not a widely known one. While some expressed themselves more colorfully: “What the fuck is that thing?”, the general consensus seemed to be that “I was not sure what this animal was, and was not affected by it emotionally for this reason”. Some scored the prairie vole with 3s (Neither Agree or Disagree) across the board because they had no preconceived notion as to what this animal was. Some likened it to a rat, and these score reflected that negative connotation. Further, one respondent even stated that the prairie vole “looks like a lonely animal” and disagreed that they were capable of forming bonds. While this has been disproved (Edwards & Self, 2006), without knowledge of this, many participants were left making guesses. It is very possible that if the sample population were as familiar with prairie voles as they were with dogs, they would be able to observe firsthand their ability to form and maintain lasting bonds.

Our cultural education about animals is both speciesist and anthropomorphic. Many stated they enjoyed looking at the dolphin because it looked as though it was smiling, the pig received similar responses of “I had a feeling of happiness because he is smiling”. While their mouths may be upturned, dolphins are often perceived as “happy” even when cortisol levels show that they are under high levels of stress (Tangley, 2001). The pig also brought about many responses having to do with food, both positive and negative. These ranged from “Bacon!” to “I feel bad for eating pork products.”. While one respondent seems to present as positively associating pigs with food, and the other expresses remorse, both participants are still seeing the pig as food, as opposed to an animal. This perception of pigs is most likely why they scored only

3.82 out of 5 on the statement “I think of this animal as intelligent” (this ranked them third lowest out of eight). It would perhaps be surprising to find, then, that the pig actually ranks higher in intelligence than dogs, prairie voles, pigeons and alligators (10 Most Intelligent Animals, 2012). The pig is also more capable of suffering than dogs; this is believed because of its 8% prefrontal cortex:brain ratio as opposed to a dogs’ 7% (Firestein, 2012). If this is known information, then why do we continue to keep dogs as house pets while we slay pigs, consume them and consider them to be sloppy? While this is not meant to suggest *any* slaughter of animals, utilitarianism would suggest that it would cause less suffering to treat dogs as we do pigs, and pigs as we do dogs. Past practice seems to be the best argument for why theses actions are not reversed. Humans have created a strong and beloved bond with dogs, but pigs have long been seen as our food source, so much so that the image of a living pig solicits comments such as “Bacon!” instead of treating them like the still living creatures that they are. Reflection on our beliefs is necessary to continue onward in a more ethically appropriate manner; if the only defense is that it’s been done for a long time, these practices must be reevaluated


Distributed Survey:



The below survey analyzes the social assumptions that humans make regarding animal abilities, behaviors, and emotions. The survey is anonymous, confidential, and should take no more than 10 minutes to complete. If you have any questions or concerns, you may reach me at fg08092n@pace.edu. Thank you for your contribution!

Falynn Goldfarb

Animal One (dog): Please answer the following questions in regard to the animal pictured below:



::

Animal One (dog): Please write one sentence explaining your immediate reaction to this animal:

Animal One (dog)

	Strong Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
I would like to have this animal as a pet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm afraid of this animal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think of this animal as intelligent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this animal is capable of creating bonds with their young	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this animal is capable of creating bonds with other animals or humans	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think this animal is capable of pleasure and suffering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Animal Two (primate): Please answer the following questions in regard to the animal pictured below:



Animal Two (primate): Please write one sentence explaining your immediate reaction to this animal:

Animal Two (primate)

	Strong Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
I would like to have this animal as a pet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'm afraid of this animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think of this animal as intelligent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe this animal is capable of creating bonds with their young	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe this animal is capable of creating bonds with other animals or humans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think this animal is capable of pleasure and suffering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Animal Three (prairie vole): Please answer the following questions in regard to the animal pictured below:



Animal Three (prairie vole): Please write one sentence explaining your immediate reaction to this animal:

Animal Three (prairie vole)

	Strong Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
I would like to have this animal as a pet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm afraid of this animal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think of this animal as intelligent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this animal is capable of creating bonds with their young	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this animal is capable of creating bonds with other animals or humans	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think this animal is capable of pleasure and suffering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Animal Four (pig): Please answer the following questions in regard to the animal pictured below:



Animal Four (pig): Please write one sentence explaining your immediate reaction to this animal:

Animal Four (pig)

	Strong Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
I would like to have this animal as a pet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'm afraid of this animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think of this animal as intelligent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe this animal is capable of creating bonds with their young	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe this animal is capable of creating bonds with other animals or humans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think this animal is capable of pleasure and suffering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Animal Five (dolphin): Please answer the following questions in regard to the animal pictured below:



Animal Five (dolphin): Please write one sentence explaining your immediate reaction to this animal:

Animal Five (dolphin):

	Strong Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
I would like to have this animal as a pet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'm afraid of this animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think of this animal as intelligent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe this animal is capable of creating bonds with their young	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe this animal is capable of creating bonds with other animals or humans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think this animal is capable of pleasure and suffering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Animal Six (elephant): Please answer the following questions in regard to the animal pictured below:



Animal Six (elephant): Please write one sentence explaining your immediate reaction to this animal:

Animal Six (elephant)

	Strong Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
I would like to have this animal as a pet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'm afraid of this animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think of this animal as intelligent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe this animal is capable of creating bonds with their young	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe this animal is capable of creating bonds with other animals or humans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think this animal is capable of pleasure and suffering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Animal Seven (pigeon): Please answer the following questions in regard to the animal pictured below:



Animal Seven (pigeon): Please write one sentence explaining your immediate reaction to this animal:

Animal Seven (pigeon)

	Strong Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
I would like to have this animal as a pet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'm afraid of this animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think of this animal as intelligent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe this animal is capable of creating bonds with their young	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe this animal is capable of creating bonds with other animals or humans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think this animal is capable of pleasure and suffering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Animal Eight (alligator): Please answer the following questions in regard to the animal pictured below:



Animal Eight (alligator): Please write one sentence explaining your immediate reaction to this animal:

Animal Eight (alligator)

	Strong Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
I would like to have this animal as a pet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'm afraid of this animal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think of this animal as intelligent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe this animal is capable of creating bonds with their young	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe this animal is capable of creating bonds with other animals or humans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think this animal is capable of pleasure and suffering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

RESULTS

In all charts:

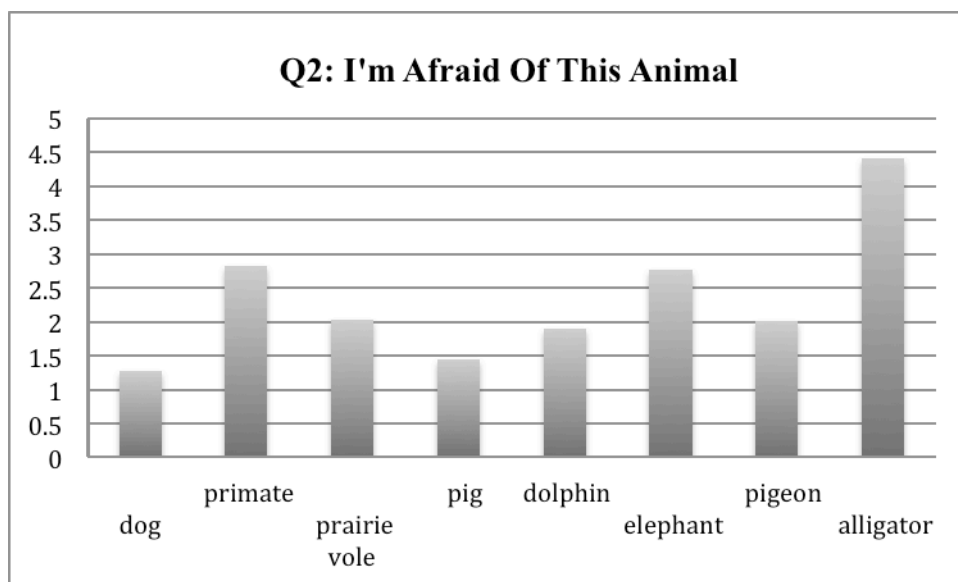
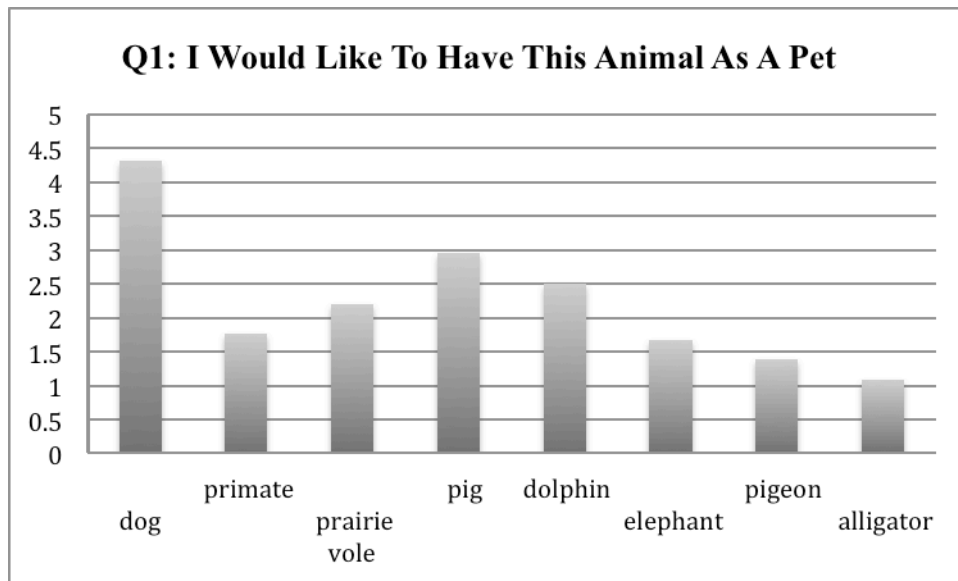
let 5= strongly agree

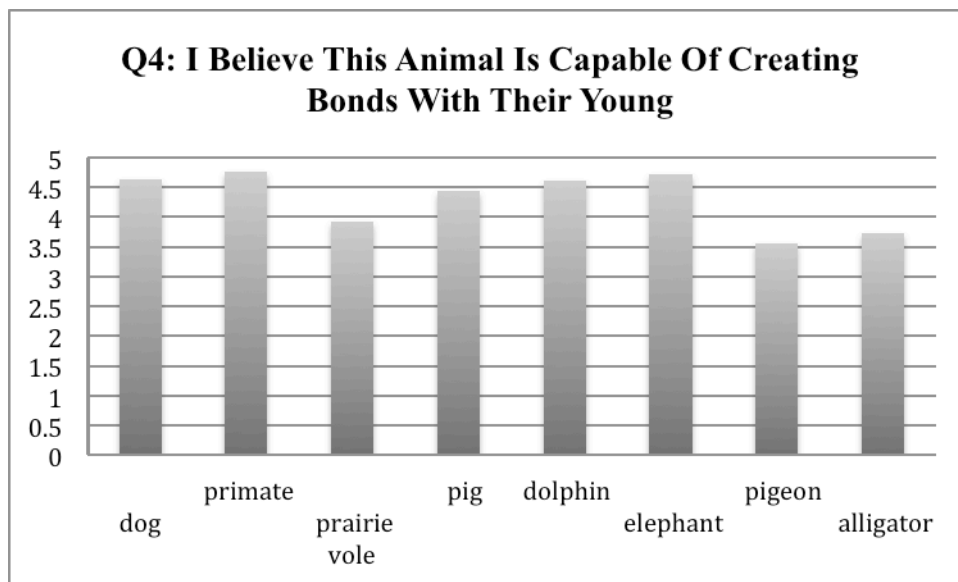
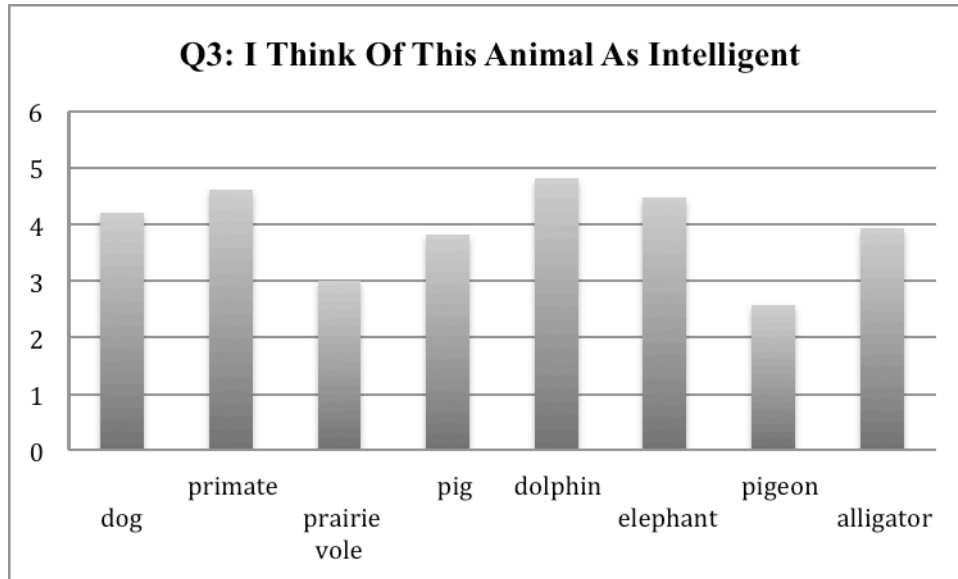
let 4=agree

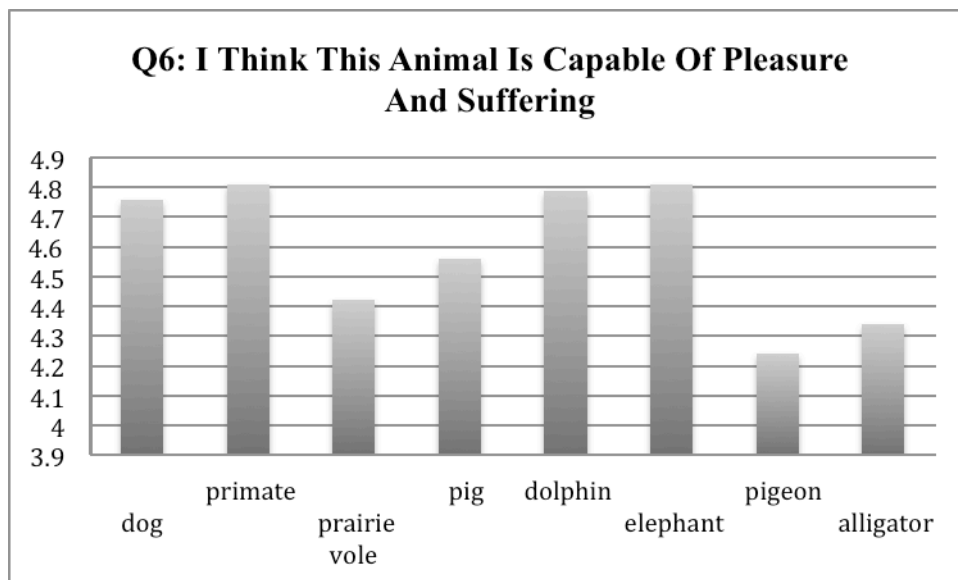
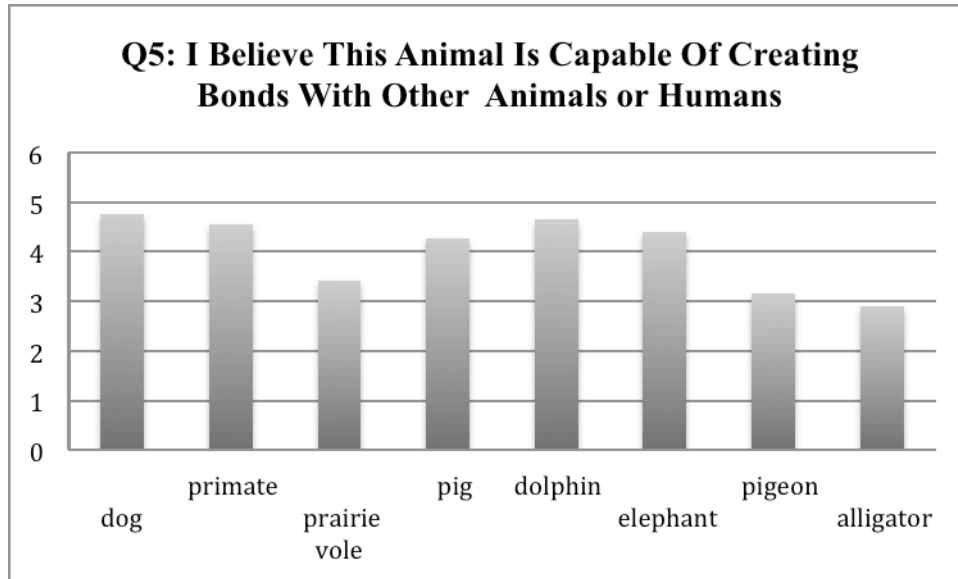
let 3= neither agree or disagree

let 2= disagree

let 1=strongly disagree







DISCUSSION

The way in which animals are treated relies heavily on our perception of them, but why should what we think be of any concern? Animals do not exist for our enjoyment, entertainment, research, or companionship, but for themselves. Ethicist Tom Regan (1985) calls this the theory of inherent value and states that both humans and animals “all have inherent value, all possess it equally, and all have an equal right to be treated with respect, to be treated in ways that do not reduce them to the status of things, as if they existed as resources for others.” He then further addresses that despite humans’ current abuse of animals (and sometimes even each other), that potential gain from others is not ethical, and does not equate to their worth: “My value as an individual is independent of my usefulness to you. Yours is not dependent on your usefulness to me. For either of us to treat the other in ways that fail to show respect for the other's independent value is to act immorally, to violate the individual's rights.” It is important to show that animals are capable of bonding with no known biological purpose in order to assist in proving that they are not machines. Without these bonds, some may come to the conclusion that they are biologically-driven robots without individual minds and desires (theory of automata), and that we can therefore use them as such (Armstrong & Botzler, 1993).

While animals are valuable in-themselves, their treatment is predicated upon through human perceptions and mis-perceptions. In a perfect world, an animal’s fate would not be dependent of human perception. In today’s society this is not the case; social and family bonds are revealed in an effort to expose a less acknowledged side of animals, and that they are much more than machines or biology. If someone were to know that cows have best friends and that they, too feel anxiety when away from those they love (McLennan, 2008), they may see the cow as more capable of a range of emotions than previously thought possible. While human

perception should not (and does not) have any bearing on the cow's value, humans are the main cause of the cow's suffering. Therefore any enlightenment toward the cow's abilities may help to foster more empathy toward it's hardships, and thus help to put an end to our ongoing mistreatment. As evidenced in the social survey, we seem to see the animals we know best in the most positive light; this was most true of dogs. It seems as though those animals are the most respected and beloved, and therefore any information that would help create better understanding and therefore better treatment is beneficial. This should be true for *all* animals, such as the aforementioned cow, as well as the pig. These are two animals that, especially in the United States, are commercially abused for our benefit.

Just as the cow is mistreated, so is the pig. It is more intelligent (Wright, 2005) and more capable of suffering (Firestein, 2012) than the dog, and yet Americans slaughter 110 million pigs each year for food, while it is not legal to sell dog meat (Pigs: Intelligent Animals Suffering, 2013). Pigs have also been domesticated, meaning that they possess a similar ability to bond with humans (Bräur, 2011). If it were understood that pigs, the animal that brought about the response of "Bacon!", could also bond, suffer, and, inferably, love just as we think the dog can, then logically they, too, should receive the respect. It would hopefully receive responses of warmth, claims of family, and even declarations of love similar to those comments referring to the dog. If there is even a potential of soliciting a different mindset due to this information, it is imperative that it be spoken to. The pig, or any animal, does not need to be loved by humans. It does, however, need to be respected.

Habit can bring about mistreatment. It is habit that allows to pig to be seen as lowly, and it is habit that allows humans to see animals as less than us. This blatant *Speciesism* (Singer, 1975) is akin to the more popular social prejudices of sexism and racism (Adams and Donovan,

1995). At one point in human history, it was socially acceptable to view women or non-Caucasians as unequal to the dominant majority group; for the most part, these practices are no longer accepted. Speciesism, however, is still widely practiced. In rare instances will a human subscribe to the concept that they are of equal value to an animal, and this would make them a speciesist. This is so culturally widespread that commonly-used terms to speak of derogatory behavior include someone being treated “like a piece of meat” or “being caged like an animal” (Adams and Donovan, 1995). This suggests that these actions are acceptable toward animals, but not toward the people they reference. If a woman is being treated like a piece of meat she is being objectified; if a person is caged like an animal they are being held against their will; and if someone is acting like a wild animal they are out of control, and looked at as unstable or crazy. Animals are used to invoke negative symbols. Those that treat people (usually in regard to women) “like a piece of meat” are treating them in a demeaning fashion. This analogy is only understood because it is culturally known that animals, the pieces of meat, are treated with little regard. These widely used phrases are speciesist, and this view point is so ingrained into our society that there is likely no remorse or embarrassment when using these statements. Just as women and minorities were seen as less intelligent, less capable of pleasure and suffering, and less than humans, animals are widely seen that way today. As with any unethical practice, people must first see the error of their ways before any progression is possible. Understanding the depth of animal capabilities is important for this reason.

Animals' worth should not *have* to be proven. However, we currently live in a society that assumes they are not inherently valuable, and for this reason the argument must be made. Unfortunately, a way to ensure that their value is understood is to make it comparable to the value of a human. It should be stressed that being similar to a human is not what makes the

animal worthy of proper and equal treatment, but is instead a tool used to convince those who see them as different and unworthy that this is not the case. While it is impossible to prove that animals have bonds exactly like our own, many similarities can not be ignored. A parent who learns that ewes are more involved than is apparently biologically necessary (Nowak, 2011) may make a connection to the bond that they themselves feel toward their child. Those who would sacrifice time, energy and temporary happiness for a dear friend may learn of monkeys or bats that share food with those in need (Waal, 1997) (Pacelle, 2011), or an entire elephant herd that slows down in what appears to be empathy for a bereaved member (Masson & McCarthy, 1995), and see similarities to their own actions. If a human is capable of drawing comparisons from animals to themselves they will hopefully be less likely to objectify them. This is why it seems of such importance to draw attention to evidence of bonds that are both difficult to explain through evolution and resemble human bonds.

Though they are not often seen as such, animals have value simply because they exist. Regan's theory of inherent value cleverly compares animals to humans in order to solidify this argument: "Animals, it is true, lack many of the abilities humans possess. They can't read, do higher mathematics, build a bookcase or make *baba ghanoush*. Neither can many human beings, however, and yet we don't (and shouldn't) say that they (these humans) therefore have less inherent value, less of a right to be treated with respect, than do others." (Regan, 1985). Humans are not written off or abused (in a widely socially accepted manner) due to lack of ability, and in the same fashion, neither should animals. They do not require a human stamp of approval for their existence to have significance. However, due to the nature in which our society functions, animals are often used and abused simply because they are not respected as living, feeling, suffering and loving beings of their own entity. For this reason it is of great importance to

illustrate that animals are more than biologically- and evolutionarily-driven machines. By presenting examples of animal bonds without an obvious evolutionary implication, it is hoped that this notion will become more apparent. Further analysis of human perception of animals is in effort to shed light on misconceptions. If widespread beliefs about animals' abilities, behaviors, and emotions are inaccurate then perhaps it will beg the question of whether our actions toward those animals are also flawed. Only when we, as humans, understand that animals are not the objects to our subject, will they have a chance to become a respected part of our shared environment. Animals are capable of bonding, suffering, reasoning, grieving, empathizing, loving, and having a deeper understanding of others, both within and outside of their species, and therefore are deserving of the same respect that a human would receive from another. If anything less is offered after being exposed to this information, it would be irresponsible and unethical.

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