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## Puppies and Broken Hearts

Harold Herzog, *Animal Studies Repository*



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Hal Herzog, Ph.D., Animals and Us

## Puppies and Broken Hearts

What science says about the healing power of pets.

Posted May 17, 2012

I am a big fan of PreFrontal Nudity. It's the fascinating Psychology Today blog in which UCLA brain researcher Alex Korb discusses the psychobiological underpinning of everything from jet lag to soccer. In a recent post, he discusses the impact of pets on human health. Korb argues that if you are having a heart attack, you should "reach for a poodle" (after you have called 911 and taken an aspirin). Then he makes the case that oxytocin -- the so called "love hormone" -- is responsible for the presumed miraculous healing power of pets.

It's a nice tight package -- just the sort of science writing that makes for a good Psychology Today blog post. The only problem is that the story is a little too good to be true. Let's examine the claims.

### **Claim 1. "Owning a dog can save you from a heart attack."**

The \$50 billion dollar pet products industry wants you to believe that playing with a dog or cat will ward off depression, cure autism, and cause you to lose weight. Unfortunately, the evidence for these claims is not nearly as strong as "the pet industrial complex" would have you believe.

Take, for example, the statement in PreFrontal Nudity that "owning a dog can save you from a heart attack." This claim is based on the results of an excellent 1995 study by my friend Erika Friedmann (president of the International Society for Anthrozoology). Erika and her colleague Sue Thomas examined the one year survival rates of 369 heart attack victims, a third of them pet owners. The overall death rate was higher for non-pet owners than pet owners (6.1 percent versus 3.7 percent). The differences in survival rates of dog owners were impressive and "statistically significant" (that is, unlikely to be due to chance). Only 1 percent of dog owners died within a year after their heart attack as opposed to 7 percent of non-dog owners. There was also a significant effect of cat ownership - but in the opposite direction. The study was nicely done and the analysis appropriate. So, can we conclude dog owners are more likely recover from heart attacks? Maybe not...

### **Not So Fast!**

Now fast forward to 2010 when an Australian study on the effects of on heart attack victims came up with a different pattern of results. This study included 424 participants, half of whom were pet owners. The design of this project was very similar to Erika's. The main difference was that the Australian researchers combined the number of subjects who died with the number readmitted to the hospital because they had a second cardiac episode.

As in Erika's study, there were statistically significant differences in the morbidity rates of pet owners and non-pet owners. But this time they were in the opposite direction! That's right – the pet owners were more likely to be dead or to have suffered a second cardiac "incident" than non-pet owners (22 percent versus 14 percent). The pattern of deleterious effects of living with a pet showed up in both dog and cat owners. However, the effects were only statistically significant when it came to the death/readmission rates of cat owners compared to non-owners.

To muddy the waters even further, a group of researchers from the University of Minnesota used a large epidemiological data set (N = 4,435) to examine the effects of pet ownership on death from cardiovascular problems. Unlike the other two studies, they found no effects of present pet ownership on deaths. However people who had owned cats in the past had significantly lower death rates.

All three studies were well done - but they came to three completely different conclusions about the effects of dogs and cats on human cardiac health (Study 1 - dogs are good but cats are bad; Study 2 - no effect of dogs but cats are bad; Study 3 - no effect of dogs but cats are good). I'm confused.

## **Claim 2. Oxytocin is the biochemical glue.**

Which brings me to PreFrontal Nudity's second claim – that the mechanism behind the presumed (though unsubstantiated) beneficial effects of pets on the human heart is the love hormone.

The link between oxytocin and the human-animal bond was first made by two South African researchers. They conducted a classic "before and after" study in which 8 men and 10 women petted dogs. Blood samples were drawn from the human and animal subjects right before the petting sessions and immediately afterward. The results were impressive. After petting the dogs, the subjects' oxytocin levels went up.

There were, however, several problems that compromise the conclusion that oxytocin is the glue that cements the human-animal bond. First, there is the small sample size. Second, while there were changes in the oxytocin levels, there were also spikes in all six neurochemicals that the researchers measured – including prolactin, endorphins, and dopamine. Who is to say oxytocin was the critical hormone, rather than, say, dopamine or endorphin – neurotransmitters which are also associated with pleasure and reward? Third, the changes in hormone levels could have been the result of recovering from the transient stress from having a big needle stuck in a vein in your arm. Indeed, the same patterns of biological changes were found when subjects quietly read a book rather than interacted with a dog. So while this study is interesting, it did not prove that oxytocin is the biochemical explanation of pet love.

The good news is that other researchers have replicated the study under more controlled conditions. The bad news is that the results have been inconsistent. One study found that oxytocin levels increased in women who petted dogs but that they actually decreased in men. Another reported that the oxytocin effect only occurred in people whose dogs gazed at them.

And yet another group of researchers found absolutely no increase in oxytocin among people who interacted with pets. (The last study has not been published.)

Now I'm even more confused.

### **Pets, Health and Replication Problem**

The fact is that many studies of the positive effects of pets on people do not pass the replication test. Further, pop science writers (of which I am one) are often guilty of only covering the good stuff when it comes to the animals in our lives. For example, newspapers accounts of the Minnesota study only reported that cat owners had lower death rates. They neglected to mention that dog owners and even present cat owners were no better off than people without pets.

So you might want to dig a little deeper the next time you read that playing with a poodle will unclog your arteries and heal a broken heart.