Beware of the dog. A dog is a man’s best friend. Few of us can encounter an unfamiliar dog without some change of emotion, and dogs have been an integral part of human society since our earliest beginnings. We are social creatures, and how we interact with each other and our pets has a major impact on our well-being. The effects of the interactions between pets and people is beginning to be studied in a scientific manner, both in epidemiological and laboratory studies. The overall impression is that owning a pet is associated with better health and a reduced risk of cardiovascular disease. One proposed mechanism for this is that pets reduce anxiety and help to moderate the effects of stress.

In this issue, Kingwell et al. [1] have examined the effects of an unfamiliar but friendly dog on the cardiovascular responses to a mental stressor. The main finding was a negative one: neither the blood pressure nor the heart rate response differed according to whether or not a dog was present during the course of the study. However, when the subjects were classified as pet owners or non-owners, it was apparent that there were two different response patterns. The investigators used the technique of spectral analysis of heart rate variability, which is thought to provide an index of sympathetic arousal, albeit not a very pure one [2]. The measure they used was the ratio between the low-frequency (peak at 0.1 Hz) and the high-frequency (peak at 0.2 to 0.3 Hz) oscillations of heart period. The data indicated that when the dog was not present, pet owners showed a heart rate profile that suggested a higher level of sympathetic arousal than that of non-owners. The presence of the dog had opposite effects in the two groups: in the owners the low-frequency/high-frequency ratio went down, whereas in the non-owners it went up. The simplest interpretation of this is that the dog owners found the presence of the dog relaxing (whereas the non-owners did not), or may have experienced sympathetic arousal. Hence the overall changes would be null.

There are some interesting parallels with cardiovascular reactivity experiments in which the modulating effect of having another person present during the stressful challenge has been examined. In a study [3] of healthy subjects whose heart rate and blood pressure were monitored during a speech task, we found that if the person being spoken to was a friend, the cardiovascular response was smaller than if he or she was a stranger. Furthermore, if the stranger appeared supportive during the speech, the response was smaller than if he or she was neutral. The common thread of these studies is the concept that a familiar and comforting presence, or social support, may buffer the cardiovascular responses to stress. We are social animals, and there is a growing body of evidence that people who are socially isolated are at higher risk of cardiovascular disease than those who have close social ties, either with people or pets.

The literature on pets as a source of social support is fragmentary but encouraging [4–6]. As with studies of human social support, there have been two general approaches: laboratory studies, in which the effects of the presence of the pet on responses to stressors have been examined, and epidemiological studies, where the clinical outcomes of pet owners have been compared with those of non pet-owners. Both research strategies have their problems. With laboratory studies, the results may fail to generalize across any number of dimensions. Thus, for example, the results may be very different if the pet is someone else’s rather than one’s own. In addition, there is always the unanswered question as to the generalizability of the acute response to a contrived laboratory stressor to any long-term effects in real life.

As with all epidemiological studies, the big problem is the limited interpretability of the data because of the effect of
confounders. An example is a widely quoted study by Friedmann and Thomas [4], who analyzed the data of the ill-fated CAST (Cardiac Arrhythmia Suppression Trial) study, whose main conclusion was that antiarrhythmic drugs may kill more people than they save. Another finding of this study was that dog and cat owners had a better one-year rate of survival than non-owners. However, when social support was controlled for, owning a dog still made an independent contribution to survival, while owning a cat did not. So how do we interpret this result? The first consideration is that the sample sizes were quite small (of the 369 patients in the study there were 86 dog owners and 41 cat owners), so the potential to define complex relationships between different measures of social support is limited. Another possible explanation is that dogs need to be walked, but cats don’t, so perhaps it is the exercise that goes with dog ownership that confers the benefit. Although exercise habits were not assessed in CAST, there were no apparent differences in physiological measures between pet owners and non-owners. One previous study [6] reported that dog owners had a better one-year survival rate after a heart attack than non-owners, but the control for confounding factors was somewhat limited.

A major issue is why people choose pets in the first place. It could be that it is not the company of a pet per se, but the personality of pet owners, that is associated with a lower cardiovascular risk. Friedmann [4] found no differences in tension, anxiety, and depression between owners and non-owners, but the higher low-frequency/high-frequency ratio in dog owners observed by Kingwell et al. [1] raises the possibility that some differences do exist. The personalities of dogs vary almost as much as those of people, and it is reasonable to suppose that this is a factor in people’s choice of a dog. Little old ladies are unlikely to choose a pit bull as a pet.

This line of research does have potential practical implications. Dogs are routinely recommended as companions to blind persons, but the possibility of dog therapy for people at risk of heart disease has received little attention. Dogs need to be walked, and it is well established that people who walk regularly are at lower risk of heart disease, and the added social support could also be beneficial. Perhaps the time is ripe for a randomized trial of the effects of getting a dog in patients who have had myocardial infarction; every dog should have his day.

References