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Do Dogs (*Canis familiaris*) Seek Help in an Emergency?

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The question of whether dogs recognize an emergency and understand the need to seek help from a bystander was tested in two experiments. In the first experiment, dogs' owners feigned a heart attack in an open field, and in the second experiment, dogs' owners experienced an accident in which a bookcase fell on them and pinned them to the floor. In these experiments, one or two bystanders were available to which dogs could go for help. The dogs' behavior was taped for 6 min after the owner had fallen and was later scored for the frequency and time the dogs spent performing different behaviors. In no case did a dog solicit help from a bystander. It is concluded that dogs did not understand the nature of the emergency or the need to obtain help.

Keywords: emergency help, bystander apathy, dogs

Recent studies have suggested that dogs (*Canis familiaris*) are highly sensitive to cues provided by humans. Thus, adult dogs and puppies readily use human gestures such as pointing, head turning, and gaze as cues to the location of hidden food (Agnetta, Hare, & Tomasello, 2000; Hare & Tomasello, 1999; McKinley & Sambrook, 2000; Miklosi, Polgardi, Topal, & Csanyi, 1998; Soproni, Miklosi, Topal, & Csanyi, 2002). Dogs also learn to take a detour around a fence in order to obtain a reward by observing a human demonstrator who shows them the correct path (Pongracz et al., 2001; Pongracz, Miklosi, Kubinyi, Topal, & Csanyi, 2003). In contrast, monkeys and apes either fail to show sensitivity to such human cues toward reward or learn to use them only after considerable training (Anderson, Sallaberry, & Barbier, 1995; Anderson, Montant, & Schmitt, 1996; Povinelli, Reaux, Bierschwale, Allain, & Simon, 1997; Tomasello, Call, & Gluckman, 1997). Furthermore, wolves, a species closely related to dogs, fail to use human pointing cues as a guide to hidden food (Agnetta et al., 2000; Miklosi et al., 2003). A popular account of this increased sensitivity to human behavior in dogs appeals to the fact that dogs have lived in company with humans for as long as 10,000 to 15,000 years (Csanyi, 2000; Vila et al., 1997). During this extended period, people may have selectively mated dogs that were particularly responsive to human training and guidance.

As particularly good examples of the close association between people and dogs, dogs are commonly used to search for and rescue people and to assist handicapped people. Dogs that perform these functions are highly selected and extensively trained for a particular task. Thus, dogs selected for search and rescue work must be exploratory by nature and bond easily with humans but also not be too submissive or too dominant. Selected dogs are then trained as ground trackers or as air scent dogs. During many months of rewarded training, air scent dogs learn to find hidden "victims" (trainers) over increasingly longer distances by scenting the victim's airborne odor that disperses in a cone downwind from the victim. Because a victim's odor travels through earth, snow, and debris, some dogs are given specialized training for the search for cadavers and live victims at avalanche and other disaster sites (American Rescue Dog Association, 2002). Dogs trained as companions for blind and deaf people must both bond readily with a new owner and be particularly alert to visual or auditory events. Seeing-eye dogs are extensively trained to obey numerous commands, to proceed or to stop in certain locations or situations while out walking in public, and to lead their handlers to requested locations. They must also learn to "intelligently disobey" commands that may lead their owner into danger (George & George, 1998; Lawrenson, 2001). Hearing-ear dogs are given successive stages of reinforced operant training to alert their owner to auditory stimuli such as a knock on the door, an oven timer, the telephone, an alarm clock, and a smoke alarm. Well-trained hearing-ear dogs alternate between touching their owner and running to the source of the sound (Hoffman, 1999).

We may inquire, however, just how much dogs may understand about human behavior. For example, it has long been suggested that untrained dogs are sensitive to human emergencies and may act appropriately to summon help. More than 100 years ago, Romanes (1882) reported several such incidents in support of the continuity of intelligence between humans and animals. In one case, a man out hunting crossed a frozen river and fell through the ice. The man was able to place his gun across the opening to keep himself from sinking but could not extract himself from the river. His dog "made many fruitless efforts to save his master, and then ran to a neighboring village, where he saw a man, and with the most significant gestures pulled him by the coat and prevailed on him to follow. The man arrived on the spot in time to save the gentleman's life" (p. 447). Romanes pointed out that, although there were numerous instances of dogs helping people, this particular incident showed that the dog understood the need to go for help and the ability to communicate news of the disaster to a stranger and then to lead him to the site of its occurrence. Similar reports of dogs saving people in danger are still frequently reported (Coren, 1994, 2004; Fouts, 1997). Numerous animals are awarded

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medals each year for saving their owners in an emergency, and the majority of these animals are dogs (Purina Animal Hall of Fame, 2005).

An important aspect to consider is how commonly dogs in emergency situations come to the aid of their owners. In response to isolated reports of animal intelligence, Thorndike (1911) pointed out that many instances of apparent animal intelligence might arise from the coincidence of animals performing the appropriate behavior, leading human observers to overenthusiastically interpret and report it as evidence of intelligence. In the case of a dog saving a human in an emergency, the question is did the dog accidentally do the right thing or did the dog understand the nature of the emergency and intentionally perform life-saving behavior? Thorndike's answer to this question was to substitute experiment for isolated observation. "You can repeat the conditions at will, so as to see whether or not the animal's behavior is due to mere coincidence. A number of animals can be subjected to the same test, so as to attain typical results" (p. 26).

Although dogs may be trained to assist people in need of their help, the question asked here is whether untrained dogs will recognize an emergency and act to help a human in need. In order to examine dogs' reactions to a human emergency in an experimental fashion, a paradigm was borrowed from the field of human social psychology. Social psychologists investigated the roots of bystander apathy by carrying out a number of experiments in which an emergency was feigned in the presence of a naive subject and other bystanders who were confederates of the experimenter. This research revealed that human failure to help someone in an emergency arose more from mechanisms of social inhibition and diffusion of guilt than from an unwillingness to help another person (Darley & Latane, 1968; Latane & Darley, 1968, 1970). Two experiments are reported here in which a number of dog owners staged an "emergency" in the presence of their dogs and one or more human bystanders. The dogs' response to this situation was taped over a 6-min period to give the dogs ample time to seek help. Since the test was repeated with a number of dogs, it was possible to determine how many dogs actually acted to get help for their owners.

Experiment 1: The Heart Attack

Dogs were walked by their owners through a field, as if on a typical walk. When the duo arrived at the center of the field, the owner began to feign distress and eventually collapsed as if having experienced a heart attack. Upon collapsing, the owner remained motionless for 6 min, as the dog was filmed for its reaction to the situation. One or two human bystanders were nearby and could act as a source of potential aid for the victim.

Method

Participants. Twelve dogs (*Canis familiaris*) of various breeds and their owners participated in the experiment. The dogs consisted of 2 rough collies, 2 German shepherd dog crosses, 2 Rottweilers, 1 toy poodle, 1 Maltese cross, 1 Brittany spaniel, 1 Australian cattle dog cross, 1 Portuguese water dog, and 1 Labrador retriever cross.

Procedure. All dog owners were given written directions beforehand and were verbally briefed on how to feign a heart attack. All tests were filmed in an enclosed field that measured 152 × 76 m (a schoolyard used on the weekend). A target was painted on the ground as a marker for the owner, who was instructed to collapse at this point. A video camera was hidden in a tree located 35 m from the target and was used to record the entire test. Two chairs for bystanders to sit in were placed 10.7 m away on opposite sides of the target, and several pylons were strategically placed in order to facilitate judgments of distance when the events were viewed on a two-dimensional screen. (See the upper panel of Figure 1 for diagram).

It is worth noting that the initial stages of the test were familiar to the dogs, as most of them were exercised in this field on a regular basis. Each test was filmed from the time that the owner entered the field until 6 min after the owner had collapsed on the ground. The owner entered the field from the south side, with the dog on lead. When the owner reached the target (approximately the center of the field), he or she began to exhibit signs of distress. These included breathing heavily, coughing, gasping, clutching the arm and chest, and doubling over. After a few moments, the owner collapsed onto the target, and, from this moment on, remained completely motionless. From the instant that the owner hit the ground, the dog's behavior in response to these events was recorded for 6 min. (See the lower panel of Figure 1).

One or two bystanders (confederates of the experimenter) were seated in the chairs 10.7 m from the victim. Six dogs were tested with only one bystander present, and the other six dogs were tested with two bystanders present. The dogs were assigned to groups so that, as far as possible, dogs of the same or similar breeds were in each group. The bystanders read a magazine throughout the trial and remained indifferent to the emergency. All owners dropped the dog's lead as they collapsed on the target, thus enabling the dog to move freely and to possibly approach a bystander for help.

Effects are reported as significant only if $p < .05$.

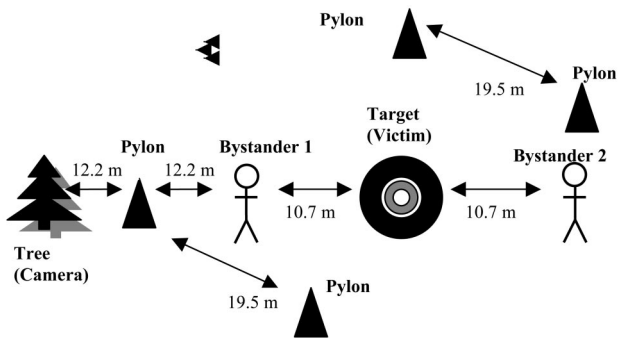

Figure 1. The upper panel shows the layout of the field on which the victim feigned a heart attack. The lower panel shows a photograph of a dog, victim, and bystander.

Results

We analyzed the videotaped tests and developed a behavioral profile for each dog, reflecting both the frequency with which the dog performed certain behaviors and the amount of time it spent performing certain behaviors. The mean frequency data are shown in the upper panel of Figure 2 and include the number of times dogs pawed, licked, nuzzled, or made some form of contact with the victim, the number of vocalizations (barking or crying) made, the number of times dogs approached to within 1.5 m of the victim, the number of times dogs approached to within 1.5 m of a bystander, and the number of times dogs touched, grasped, pulled, or pushed a bystander. None of these behaviors was performed on average with a frequency much greater that two times, with the most common behaviors being paw/nuzzle, approach victim, and approach bystander. With one exception, dogs never touched a bystander. The exception was the toy poodle, who leapt into a bystander's lap. Once there, however, it lay quietly, suggesting it was seeking comfort and not soliciting aid for its owner. Tests comparing the means of the one-bystander and two-bystander groups showed no significant difference for any behavior, $t(10) \leq 1.40$, $p = .19$. Therefore, the data from the two groups were combined to test differences between different behaviors. The most common behaviors—paw/nuzzle, approach victim, and approach bystander—did not differ significantly from one another. Vocalization occurred significantly less frequently than paw/nuzzle and approach victim, $t(11) \geq 2.45$, $p = .03$, but did not differ significantly from approach bystander and touch bystander. Touching a bystander occurred significantly less frequently than all other behaviors, $t(11) \geq 2.83$, $p = .02$, except vocalization.

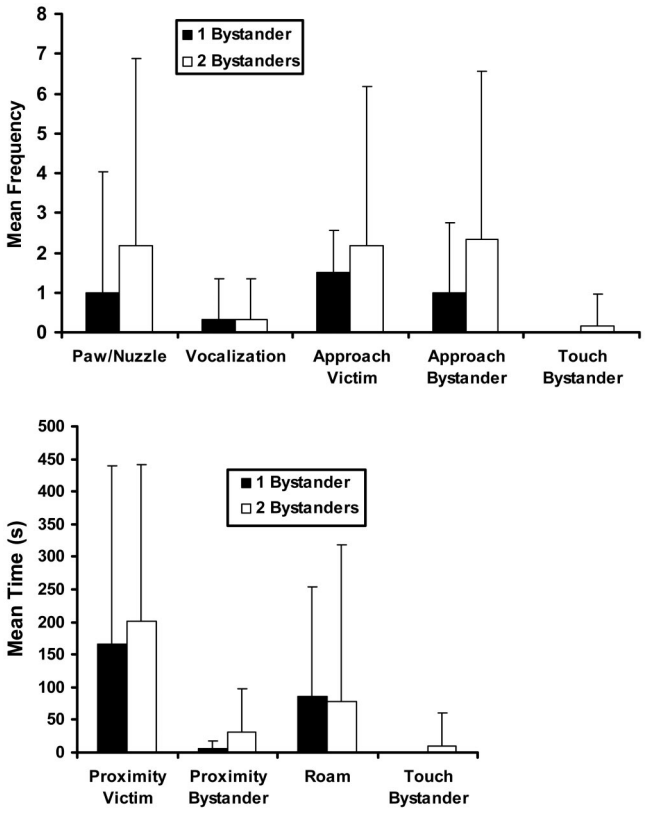

Figure 2. The upper panel shows the mean frequency of different behaviors, and the lower panel shows the mean time spent performing different behaviors. Error bars are .05 confidence intervals.

The lower panel in Figure 2 shows the amount of time dogs in each group spent in close proximity to the victim (within 1.5 m), in close proximity to a bystander (within 1.5 m), roaming the field, and touching a bystander. No significant difference was found between the one-bystander and two-bystander groups for any behavior, $t(10) \leq 1.79$, $p = .10$, and thus these groups were combined for comparisons between behaviors. The data indicate that dogs spent more time near the victim than doing anything else. Dogs often laid or sat beside their owner. The time spent in proximity to the victim was significantly greater than the time spent in proximity to a bystander or touching a bystander, $t(11) \geq 4.14$, $p = .002$. The time spent touching a bystander was significantly less than time spent performing all other behaviors, $t(11) \geq 4.14$, except proximity to a bystander. In fact, the mean touch bystander score of 5.2 s arises only from the 62 s the toy poodle laid in a bystander's lap.

Discussion

The data from Experiment 1 provided little evidence to indicate that dogs understood the nature of the emergency and took action to get help for the victim. Most dogs either stayed near the victim or roamed around the adjacent area. In roaming about, the dogs occasionally passed near a bystander. However, no dog contacted a bystander in such a way as to suggest that it was soliciting help for its fallen owner.

The heart-attack scenario used in Experiment 1 may be criticized on several grounds. First, the feigned heart attack may not have convinced dogs that this was truly an emergency. Although victims acted out the symptoms of a heart attack before falling to the ground, once the victim fell to the ground, there was no further activity to indicate an emergency. Second, the dog might have related its owner lying quietly on the ground to the act of going to bed and sleeping each night, which of course is not an emergency. Finally, the presence of one or two passive bystanders might have had the same influence on the dog as it does on human subjects in such an experiment: It acts to inhibit helping behavior. That is, dogs might have interpreted the lack of interest by the bystander(s) as an indication that this was not really an emergency.

Experiment 2: The Falling Bookcase

In Experiment 2, a more explicit emergency was acted out. In the "lady in distress" experiment conducted with human subjects (Latane & Rodin, 1969), people ostensibly heard a woman in the next room climb on a chair to reach items on a bookcase and then fall and cry out in pain as the bookcase fell on her. In this dog experiment, a bookcase falls on the dog's owner and pins him or her to the floor. The victim then cries out in pain and asks the dog to get help. A bystander whom the dog has already met is available in a nearby room. The dog's behavior again was videotaped for 6 min to see if the dog would go to the bystander for help. A control group also was tested in this experiment to obtain dogs' baseline behavior when their owners were not injured.

Method

Subjects. Thirty dogs participated in this experiment. They included 7 rough collies, 4 smooth collies, 4 bearded collies, 4 Shetland sheepdogs, 2 vizslas, 2 Maltese crosses, 2 golden retrievers, 1 German shepherd dog cross, 1 standard poodle, 1 soft-coated wheaten terrier, 1 Portuguese water dog, and 1 walker hound/blue tick hound cross.

Procedure. The experiment was performed indoors at a dog obedience school. The largest room formed the main training area and was approximately 21 m long × 15 m wide. A bookcase with several books on it was positioned in this room. Adjacent to this main room were a separate grooming room and a small secondary training room. Two video cameras were used to tape the tests, one of which was placed in an aerial position on a balcony off the storage room. The second camera was positioned in the secondary training room, where a bystander was available. (See the upper panel of Figure 3 for a diagram.)

Fifteen dogs were assigned to the experimental (emergency) condition, and the other 15 dogs were assigned to the control (no emergency) condition. As in the first experiment, dogs of each breed were equally assigned to experimental and control groups, as far as possible. Taping of a test began when the owner entered the school with the dog on a lead and went into the secondary training room. The dog's owner introduced himself/herself and the dog to the bystander, thus ensuring that the dog was made aware of the bystander's presence in the separate room. The owner and dog then left the secondary training room, entered the main room and approached the bookcase. The owner proceeded to examine the books on top of the bookcase. In the experimental condition, the bookcase then fell on the owner, knocking the owner to the floor and pinning him/her under the bookcase. The dog's lead was released at this moment, leaving the dog free to move about the school. The dog's owner then cried out in pain, indicated that he or she could not get out from under the book case, and told the dog to go to the bystander to get help. The dog's behavior then was taped for 6 min while its owner implored it to find aid. In the control condition, the owner dropped the dog's lead and then stood motionless at the bookcase for 6 min.

The bookcase was 91.5 cm long × 80.2 cm tall × 24 cm deep and was made of veneer over particle board. It was light in weight and did not actually injure any of the human participants. The dog owners were given specific instructions on how to pull the bookcase over on top of themselves and were allowed to practice doing this in the absence of their dogs before the experiment. They were also instructed to feign injury and to ask their dogs to find help by getting the bystander. (See the lower panel of Figure 3.)

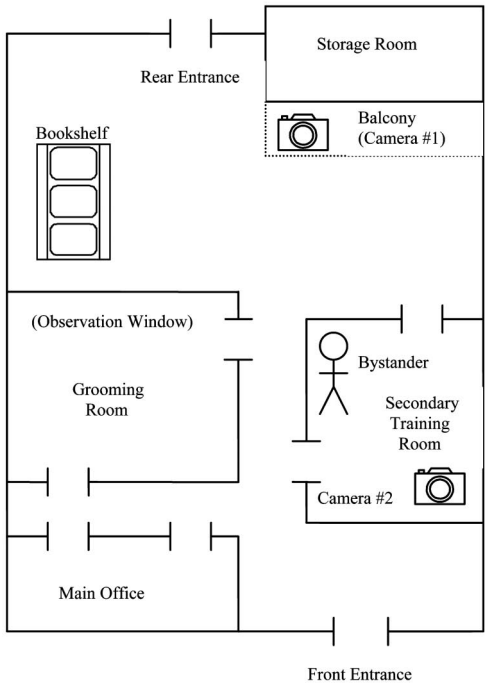

Figure 3. The upper panel shows a diagram of the rooms in the dog training school and the lower panel shows a photograph of a fallen victim and her dog.

Results

The mean frequencies of different behaviors are shown in the top panel of Figure 4. Dogs in the experimental group approached the owner and touched the bookcase significantly more often than dogs in the control group, $t(28) \geq 2.29$, $p = .03$. Although control dogs approached the bystander, approached agility equipment stored in the main room, and entered the hallway somewhat more frequently than the experimental dogs, none of these differences was significant, $t(28) \leq 1.52$, $p = .14$. No dog in either group touched the bystander. The major difference between behaviors was the high frequency with which experimental dogs approached the owner (victim); approaching the owner was significantly higher than all other behaviors in the experimental group, $t(14) \geq 4.80$, $p = .0003$.

The time spent performing different behaviors is presented in the lower panel of Figure 4. The major differences between groups were in the time spent in proximity to the owner (time spent within 1.5 m of the owner) and the time spent roaming. The duration of proximity to the owner was significantly higher in experimental dogs than in control dogs, $t(28) = 3.93$, $p = .0005$, and the duration of roaming was significantly higher in control dogs than in experimental dogs, $t(28) = 3.03$, $p = .005$. Dogs in both groups spent only small amounts of time in proximity to the bystander (time spent within 1.5 m of the bystander), time spent touching the bookcase, or time spent vocalizing. None of these measures differed significantly between groups. Since no dog in either group touched the bystander, time spent touching the bystander was zero for both groups. Dogs in the experimental group spent the majority of their time near the owner (victim), and dogs in the control group spent most of their time roaming. In the experimental group, the duration of proximity to the owner was significantly higher than every other behavior, $t(14) \geq 2.75$, $p = .02$. In the control group,

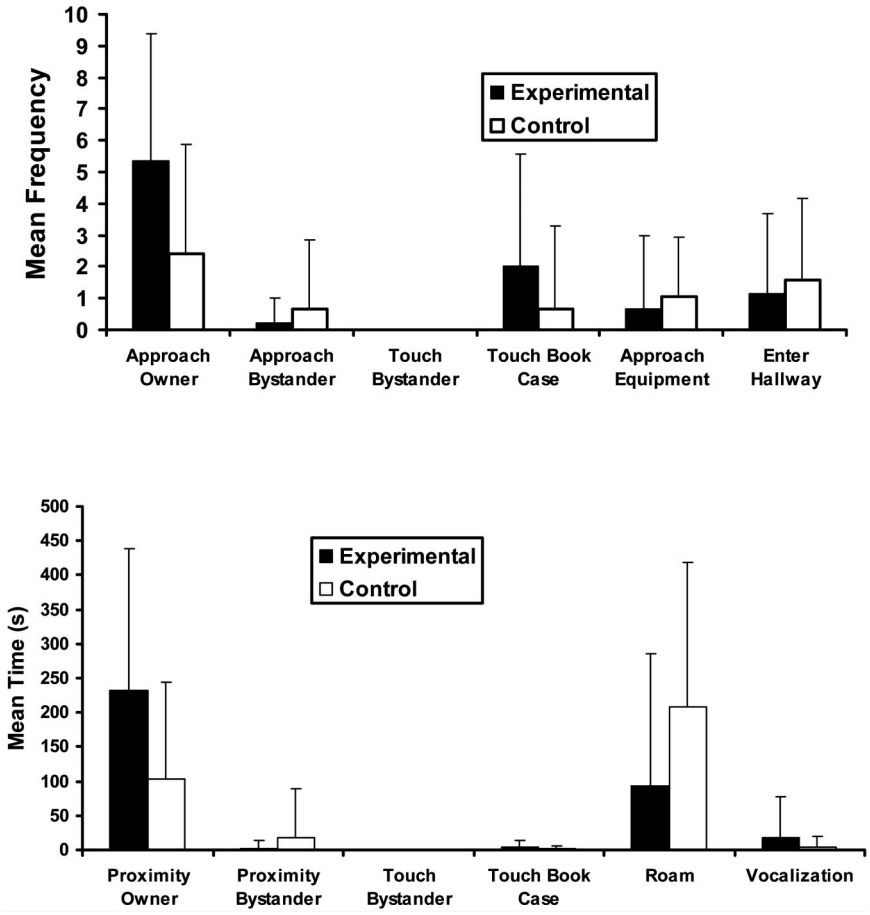

Figure 4. The upper panel shows the mean frequency of different behaviors, and the lower panel shows the mean time spent performing different behaviors. Error bars are .05 confidence intervals.

the duration of roaming was significantly higher than every other behavior, $t(14) \geq 2.42$, $p = .03$.

Discussion

Both the frequency and time measures indicated that dogs in the experimental group spent more time near their owners (victims) than the dogs in the control group spent near their owners. Dogs in the control group spent most of their time roaming around more distant areas in the training school. Although this difference might be interpreted as dogs in the experimental group showing greater concern for their fallen owner, it should be remembered that owners in the experimental group were lying on the ground and vocalizing constantly. The control group owners stood motionless and quiet during the 6-min period after the dog's leash was released. It may be that experimental dogs were simply more attracted to their owners on the ground making considerable noise.

Dogs infrequently approached the bystander and spent little time in the bystander's vicinity. The time that was spent near the bystander was greater in the control group than in the experimental group. No dog in the experimental group touched the bystander in an attempt to move the bystander toward the victim. As in Experiment 1, the data indicate that dogs did not seek aid for their owners in an emergency.

General Discussion

The question of whether dogs would seek help for their owners in an emergency situation was investigated in two experiments. These experiments differed in several ways. In one, the victim feigned a heart attack and lay quiet and still, but in the other the victim expressed pain and explicitly appealed to the dog for help. Because the "heart attack" may have been too subtle to be recognized as an emergency in Experiment 1, the much more dramatic event of a bookcase falling on the victim was staged in Experiment 2. At issue in both of these scenarios was whether dogs would seek help from available bystanders. No dog approached a bystander or attempted to get the bystander to move toward the victim. Although dogs sometimes came within the vicinity of a bystander when roaming about, they otherwise tended to ignore the bystander(s). This was the case when one or two bystanders were visible to the dogs in Experiment 1 and when a single bystander was available in a nearby room in Experiment 2.

These experiments involved a reasonable number of dogs (12 dogs in Experiment 1 and 15 dogs in the experimental condition in

Experiment 2) and a variety of breeds of dogs. Thus, the possibility of breed-specific readiness to seek help seems unlikely.

Although dogs tended to roam some of the time in both experiments, they spent more time near the fallen victim both in Experiment 1 and in Experiment 2's experimental group. Dogs in the control group in Experiment 2, on the other hand, spent more time roaming than remaining near their owners. This greater attentiveness to the owner in the emergency conditions could be a sign that the dogs showed concern for the victim's situation. On the other hand, this behavior could have arisen from the fact that the dogs had greater access to their owners under the emergency conditions. That is, the owners lay on the ground or floor in the emergency conditions with their head and upper body available to the dogs, whereas the owners stood erect in the control group of Experiment 2. In Experiment 2, in particular, the noise made by the owner may have further attracted the dog's attention. Although not performed, a valuable control condition would be one in which the owner simply lay on the floor with no apparent injury and vocalized. If dogs spent more time roaming than near the owner under this condition, it would suggest that their behavior in the emergency conditions was based on concern for the owner.

The purpose of these experiments was not to prove that dogs never help humans in distress. As summarized in the introduction, dogs can be trained to respond to signals in ways that provide help to people who need assistance. It is also likely the case that untrained dogs have performed behaviors that have aided people in emergencies. The question addressed here is about animal cognition. Do dogs recognize an emergency situation as such and intentionally take action to help a victim? The alternative to this possibility is that those cases in which a dog's behavior was helpful were the product of coincidence in which the dog just happened to do the right thing. There may be innumerable other instances in which a human faces an emergency in the presence of a dog and the dog does not perform helpful behavior. These latter cases may not get reported because people see them to be of little interest. Those few cases in which dogs do perform helping behavior get reported in the media and may be taken as the norm for dog behavior. We attempted to deal with this question by testing a sizable number of dogs in mock emergencies. The fact that no dog solicited help from a bystander—neither when its owner had a "heart attack" nor when its owner was toppled by a bookcase and called for help—suggests that dogs did not recognize these situations as emergencies and/or did not understand the need to obtain help from a bystander.

Critics of these studies have suggested that the mock emergency scenarios used were not sufficiently dramatic or realistic to be interpreted by a dog as a real emergency. Alternate situations suggested which a dog might perceive as an emergency are ones in which the dog's owner is drowning, caught in a fire, or attacked by another person. It has been suggested that pheromones produced by a person suffering the pain and the stress of a real emergency might be smelled by a dog and contribute to its sense of a real emergency. In response to these criticisms, a couple of points can be made in defense of the reported experiments. Intentional variations in the two experiments were introduced to make the staged emergencies different. The victim lay motionless and quiet in one case but thrashed about and cried out in pain in the other. The bystander was immediately present in the heart attack experiment but was not immediately visible in the bookcase experiment. In addition, a several breeds of dogs were included. In none of the combinations of these conditions did a dog seek help for its owner from a bystander. It should also be mentioned that the scenarios staged in these experiments were equally as or more dramatic than those staged in human bystander apathy experiments. Yet, in the human experiments, naïve subjects interpreted the situation as a real emergency and acted to help the victim in conditions that did not involve social inhibition created by the presence of other bystanders. In other words, other humans, who one might think would be particularly sensitive to a fraudulent episode, readily interpreted the mock emergency as a real one. Should we expect dogs to be more sensitive to the nature of a human emergency than humans?

Nevertheless, we do acknowledge the possibility that dogs might seek aid for their owner in alternate emergency situations. The experiments reported here may be viewed as initial studies of the nature of complex social interactions between humans and dogs. They provide a paradigm for studying such interactions, particularly the response of a canine to a human emergency. Perhaps future experiments can be performed in which more drastic and realistic emergencies are staged in the presence of dogs to see if they may yet show evidence of seeking help for their endangered owners. Although the present findings are not encouraging, they may serve as a challenge to other investigators to seek more favorable evidence.

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