



## Do Animals Commit Suicide? Does It Matter?

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Do animals commit suicide? Recently an article in the authoritative *Time* (Nobel, 2010) restarted the debate (Cobb, 2010), with many pros, enriched with examples and pathetic remembrances, and an indignant “no way,” including that of Rowan Hooper, editor for the News of *New Scientist* (Hooper, 2010). Please, do not quote lemmings or the scorpion circled by fire, stated Hooper: they *do not* commit suicide. Hooper is right. However, the question deserves a reply, which is slightly more complicated than a simple yes or no.

### The Debate

In *Endeavour*, Ramsden and Wilson recently summarized the history of the topic (Ramsden & Wilson, 2010). Since ancient times, folkloric tales on suicide in animals have served the purpose of reflecting social values and of illustrating popular beliefs about suicide (Preti, 2005). Animals were thought to be driven to suicide because of the same reasons that humans would kill themselves: grief, desperation, pain, and unbearably strong emotions. Alleged suicides of dogs or horses were seen as proofs of feelings in animals, and of their right to be treated with care and sympathy.

However, Ramsden and Wilson did not really answer the question. Nonetheless, the debate reverberates on the Internet (Cobb, 2010; Hooper, 2010).

Is there any instance of suicide among animals? Yes, said many.

The most quoted example of an animal committing suicide is: *homo sapiens*. Humans are animals, many bloggers commented. Humans do commit suicide: so, animals *do* commit suicide.

Others have reported examples of pets and domestic animals that starve to death after the passing of their mate, as, for example, geese (Comment 11 in Cobb, 2010). An oft-reported case is that of whales beaching themselves, though

someone correctly pointed out that whales beach because of misled navigation resulting from sea pollution. “Suicidal” dogs, starving to death near their owner’s grave, have been known since ancient times (Preti, 2005), and were reported in modern times, also. “That a dog will grieve itself to death is well documented. Some will refuse food and water after the passing of a close human or animal” stated an anonymous Nom de Plume (Hooper, 2010). And then, of course, there are the suicidal cows throwing themselves off a cliff near the small village of Lauterbrunnen, in the Alps. Police are investigating the recurring accident: “Cows growing up in the mountains normally can estimate dangers and do not plunge down cliffs” (Daily Mail, 2009).

“Who cares?” is the reply of sceptics: We cannot reasonably represent will in animals. Therefore, suicide being the outcome of voluntarily self-inflicted harm to the body, we will never be able to say anything meaningful about suicide in animals.

Indeed, no convincing animal model of suicide has been produced so far. Nevertheless, specific symptoms/conditions related to human suicidal behavior can be investigated step by step, and these investigations can offer important clues for prevention and/or treatment (Malkesman et al., 2009; Preti, in press).

However, this is not the whole history.

### Suicide in Animals

In a past review, a French investigator, Bourgeois, identified three main models of suicidal behavior in animals available to ecological research: (a) “unfavorable dispersions due to demographic pressures or human encroachment”; (b) “altruistic sacrifice to protect the group”; (c) “grief over loss of a beloved owner” (Bourgeois, 2007). The first mechanism is unlikely to offer important analogies to human suicidal behavior; the other two models are plausible, but rare in humans.

To date, naturalists have not identified suicide in non-human species in field situations despite intensive study of thousands of animal species (Preti, 2007). Suicide is a rare occurrence in humans: No surprise then if evidence of suicidal animals in both wild and domestic situations is hard to find. However, there is sparse evidence of self-harming behaviors in animals.

Animals subject to sudden confinement and pets experiencing separation from their owners sometimes do show self-destructive behaviors (Crawley, Sutton, & Pickar, 1985). Stressful situations such as crowding, isolation, separation, and confinement, especially when perceived as uncontrollable, can result in self-endangering behaviors, particularly among primates (Crawley et al., 1985; Preti, 2007). The impairing effects caused by internal parasites on behavior are thought to stimulate self-endangering behaviors in some species of insects such as butterflies (McAllister & Roitberg, 1987), and of mammals, such as the “suicidal” attraction to the feline in rodents parasitized by *Toxoplasma gondii* (Berdoy, Webster, & Macdonald, 2000). Overall, these instances are rather doubtful parallels with human intentional self-killing.

Among birds, strong competition is observed among siblings to gain parental resources. It was proposed that as mortality by starvation increases, selection would favor fratricide at first, then fratricide plus infanticide, and finally “suicide” by the nestling with the shortest life expectancy (O’Connor, 1978).

Besides these cases of extreme self-sacrifice, the instances when an animal endangers its life to the point of risking death generally fall within parental behaviors or actions done on behalf of a close kin (Preti, 2007). Altruistic suicide is known in humans (Leighton & Hughes, 1955). Suicide with hostile intent, aimed at revenge, is recorded in the anthropological literature (Preti, 2006), and spiteful or retaliation intentions are sometimes encoded in suicide notes (Davis, Callanan, Lester, & Haines, 2009). Nevertheless altruistic suicide and suicide with hostile intent form a small fraction of all cases of suicides: The majority of suicides can be attributed to the will to stop unbearable suffering or to detach oneself from life circumstances.

## Do Animals have the Ability to Plan Their Own Death?

The people who are most critical toward the idea that animals can commit suicide state that animals do not have the capacity to represent their own death, which is a prerequisite to planning suicide. Most animals fail the mirror test, which determines whether an animal can recognize its own reflection in a mirror: A proof that animals are unlikely to think about themselves as individuals.

However, many “pros” have protested: “The use of mir-

ror-recognition as the definition of ‘knows self’ is absurd. It presumes that the subject is vision-oriented and that the subject cares more about vision than other senses. Try a SMELL test with dogs. Clearly tracking dogs understand individual smells,” stated Lowell (Hooper, 2010).

Nevertheless, the already quoted Nom de Plume admits that: “at the heart of suicide are the beliefs that life is unlivable and that conditions will not improve. That requires a certain level of cognitive ability as well: to assess current conditions; to project future circumstances; to comprehend death; to comprehend a means of self destruction. Is that within the grasp of animals?” (Hooper, 2010).

Animals are able to pretend (Mitchell, 2002). Pretending is the first step in the formation of a theory of mind. Therefore, animals – mammals at least – are able to think about the minds of other beings. They are able to make projections, including the death of a prey (this is what a good predator is able to do efficiently) and, maybe, their own death.

Animals can display anger. Therefore, they do feel emotions. Behaviors similar to those of humans experiencing sadness or grief were described in animals, particularly in sociable mammals (McMillan, 2005). Some animals, admittedly, have the mental machinery to commit suicide. Do they, as humans do?

## Mental Disorders and Suicide

A major mental disorder – especially major depressive disorder and alcohol-related problems – is the most significant clinical correlate of suicide ideation, plan, and attempt (Nock et al., 2008). Nevertheless most patients with a psychiatric diagnosis do not die by suicide, or attempt suicide: In schizophrenia, for example, up to 40% of patients attempt suicide in their lifetime (Harkavy-Friedman et al., 1999), but 60% of them will never do so.

Heritability of suicide risk within families is separated from heritability of mental disorders, suggesting that some biological components specific to suicidal behavior run within families independently from those involved in psychopathology.

One may suggest that psychopathology does not lead to suicide per se, but it increases the risk that suicidal ideation progresses to planning, suicide attempt, and completion.

Severe mental disorders disrupt sleep-wake cycles, often causing insomnia: Sleep disorders, especially insomnia, were found to immediately precede suicide in both young and adult people (Bernert & Joiner, 2007). Increased anxiety is also a feature of severe mental disorders, and a correlate of suicidal behavior as well. Symptoms of depression such as low self-esteem and feelings of hopelessness tend to recur in other diagnoses, too, contributing to the feeling of desolation that often precedes a suicide attempt (see Figure 1).

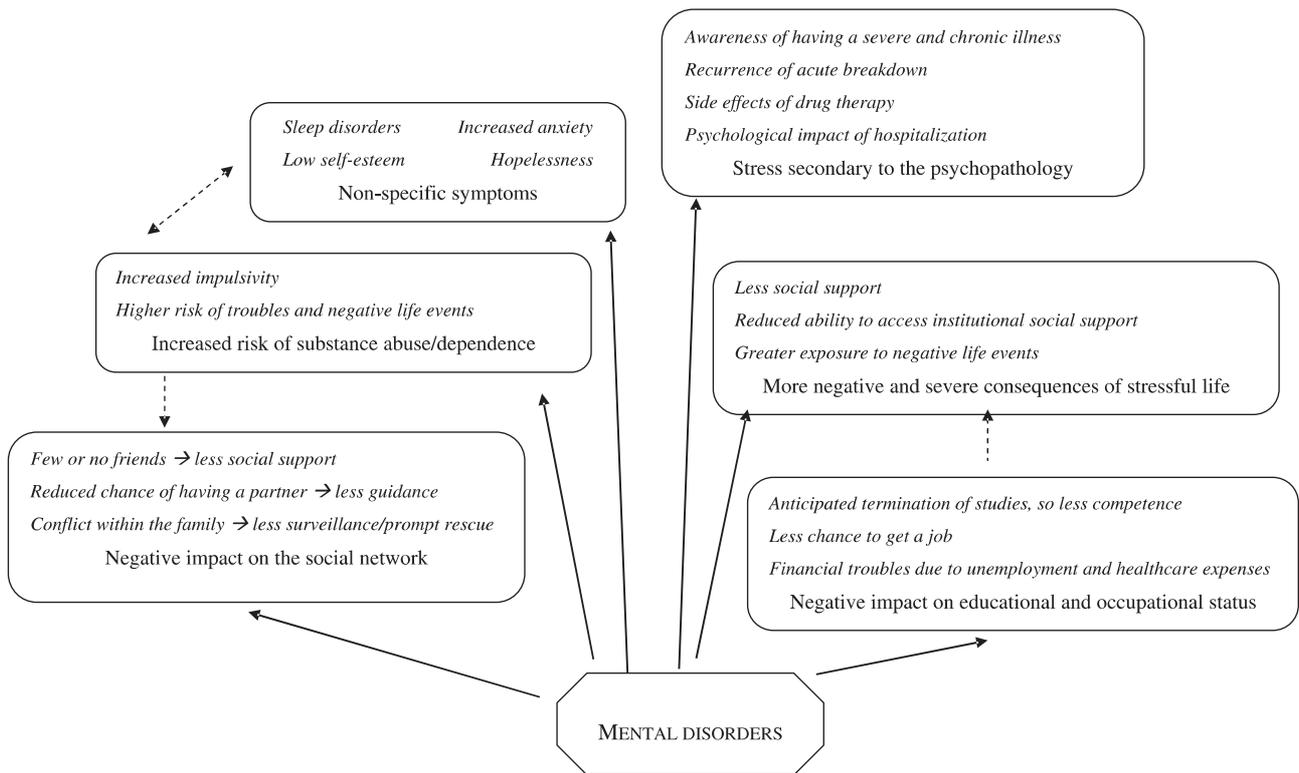


Figure 1. The impact of mental disorders on suicidal behavior.

Patients diagnosed with severe psychiatric disorders often report relational difficulties, have difficulties in establishing friendships and romantic relationships, suffer an enhanced risk of relational or marital split, and more often live in isolation: They have reduced social support, reduced surveillance when needed, and less prompt rescue in the case of a suicide attempt. People with severe mental disorders are also more likely to be unemployed and to have financial problems, these conditions increase their chances of stressful life events, stress being a precipitating factor in many suicide (Haw & Hawton, 2008).

Do animals experience anxiety? Yes, they do. Especially when exposed to novel or overtly open environments, animals often display behavioral symptoms that remind one of those observed in anxious humans (Malkesman et al., 2009).

Do animals experience depression? We cannot say this for sure, but animals can display behavioral symptoms of helplessness, and indeed animal acquired or learned helplessness is considered a good model of depression in humans (Malkesman et al., 2009; Preti, in press). Do they experience stress? Yes, they do, and can die by the consequences of stress (Neville, 2004).

Are these resemblances between animal and human occurrences too weak to be meaningful? Yes, they are, but the investigation of even weak links between animals and humans can offer important information to understand and prevent suicidal behavior in humans.

## What Next?

Based on WHO estimates, each year approximately 1 million people die by suicide in the world. Lack of valid animal models of suicide seriously hampers the investigation of the biological factors involved in human suicidal behavior. Better knowledge of self-endangering behavior in animals might allow the formulation of more reliable and valid models. Continuous effort will be necessary to avoid any anthropomorphizing: This effort would be rewarded by a greater understanding of risk and protective factors involved in suicide.

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