

Fear of Death and Muddled Thinking – It Is So Much Worse Than You Think

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Abstract

Humans clearly have trouble thinking about death. This trouble is often used to explain behavior like delay in writing wills or buying life insurance, or interest in odd medical and religious beliefs. But the problem is far worse than most people imagine. Fear of death makes us spend fifteen percent of our income on medicine, from which we get little or no health benefit, while we neglect things like exercise, which offer large health benefits.

One cannot look directly at either the sun or death. La Rochefoucauld, 1665.

Any animal that uses emotion to focus its attention must have a healthy fear of death. When something death-related appears in its environment, the animal must attend to identifying and responding to possible threats. We humans have inherited this fear of death, but human intelligence allows many new ways for environmental cues to suggest death to us. So we humans must manage our wandering thoughts, to avoid triggering this fear too often.

We usually do not feel very afraid of death, and we are not aware of thinking about death much. But apparently we are just not very aware of how much the fear of death directs our thinking. Scholars assure us that subconscious death fears are a powerful influence on our thinking (Becker, 1973).

Psychologists have even found that weak death cues, like standing next to a mortuary or watching an autopsy video, measurably change our thinking. In the presence of such death cues we tend to reward heroes and punish prostitutes more. We tend more to favor those

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who praise our religion and nation, and to favor those who criticize others. We become more reluctant to treat flags and crucifixes casually. We think we are better drivers, and that others agree with us more. We try harder to divert attention from our less attractive features and group affiliations (Soloman, Greenberg, & Pyszczynski, 2000). We believe more in the supernatural (Norenzayan & Hansen, 2006).¹ (People with high self-esteem, oddly enough, are mostly immune to these effects.)

Ah yes, the fear of death, you say. As someone who reads books like “Death and Anti-Death,” you feel familiar with this concept. You sometimes feel the fear yourself, and you see that people often delay long before arranging for life insurance, wills, or HIV tests (Kopczuk & Slemrod, 2005). You may have seen people pushing to do “everything possible”, even harmful things, for a dying loved one because they could not accept the inevitable. If you are an atheist, you may think that religion and supernatural beliefs exist primarily to help people deal with death fears (Atran & Norenzayan, 2004). And if you have an unusual medical belief, such as in cryonics, you may invoke the fear of death to explain the hostility and disinterest you face.

But you probably think that this is about as far as it goes. Sure, among “primitive” cultures, or the less educated around you, a desperate need to feel control over death may lead to an overconfident trust in fairy tales and quack cures. But you know that *your* tales and cures are supported by the clarity of science and statistics. You live in a rich society with an advanced understanding of biology, enabling powerful technologies of medicine and public health, allowing a vast improvement in health and lifespan. The modern medical miracle, at least, is no miracle. Right?

Sorry to be the bearer of bad news, but, well, maybe you should sit down. Everything I am about to tell you has long been well known among the people who specialize in studying these things. None of this is particularly new or controversial to them. But most of it is probably news, perhaps even shocking news, to you. Here goes.

Yes, our society understands a great deal about biochemistry and the mechanisms of life. This allows us to generate reasoned hypotheses about the causes of our deaths and the interventions that might prevent such deaths. But biological systems are far too complex for us to have much confidence in such hypotheses. Fundamental principles cannot tell us why exactly any one person dies, or what would have prevented that death. To confirm or refute such hypotheses, we must look at who actually lives and dies in the world around us.

But we do look at who lives and dies in our world, do we not? Well individual doctors have long justified their confidence in the cures they recommend by pointing to their personal experience seeing patients live and die. Yet many medical historians now say that before a century or so ago most people would on average have been healthier if they had completely avoided doctors. So clearly our doctors’ informal experiences can not by themselves assure us that we are avoiding fairy tales and quack cures.² You may know someone whose health

¹I suspect this behavior was functional for our distant ancestors. By believing more in themselves, the supernatural, and their nation or religion, our ancestors could credibly signal their ability and loyalty, which might inspire their neighbors to help to protect them more from threats.

²Informal medical judgments often fall far short of statistical standards (Dawes, Faust, & Meehl, 1989).

dramatically improved after being treated. But usually even untreated people get better eventually, and you probably also know people whose health dramatically declined after being treated. Personal anecdotes just do not help much here.

But our doctors rely on scientific studies, not just informal experience, right? Well, in fact the vast majority of what doctors do is not based on specific scientific studies. For most things that doctors do there are no studies, and when there is a study most doctors have not even heard a summary of the study.³ Actually, doctors mostly just copy what the doctors around them do, and try a few new things out on their own. This produces huge practice variation, where similar patients are treated very differently by doctors in different regions (Welch, Miller, Welch, Fisher, & Wennberg, 1993).

O.K., this may be true about treatments like surgery, bed rest, and so on, but for drugs at least regulation forces doctors to attend to studies, right? Well, it is true that doctors can only prescribe drugs approved by government regulators. However, once a drug has been approved to treat any condition, doctors are free to use that same drug to treat any other condition, regardless of what studies say.

How about when regulators approve drugs to treat specific conditions? At least we know those treatments are more than fairy tales and quack cures, right? After all, drug companies have to produce not just any study, showing some possibly misleading correlation, but a blind randomized clinical trial. That is, patients must be randomly assigned to treatments, must not be told what treatment they are getting, and statistics must then determine if any differences are “significant.”

Even then three serious problems remain. First, drug companies often do a bunch of trials, but only report the trials that make their drug look good, invalidating the usual statistics. Second, drug companies usually run best case trials, on patients most likely to benefit and under doctors most likely to make good choices. The fact that the best patients under the best doctors benefit may not say much about how ordinary patients and doctors will fare. Third, patients can often tell if they are getting the drug being tested instead of a sugar pill, because most drugs tested have side effects, such as dizziness or dry mouth. Patients who experience side effects are then assured that they are getting the real treatment, producing a placebo effect (Kirsch & Sapirstein, 1998).

Well, sure, you can always be skeptical if you try hard enough. But is there any concrete reason to think that we do not typically benefit from medical treatment? Actually, for decades researchers have worked to measure the average health effects of medicine. Some of these studies look at correlations out in the world, seeing if people who get more medical care tend to be healthier, all else equal.

Correlations-in-the-world studies see many apparently large influences on health, including age, gender, exercise, social status, urban location, smoking, sleep, and even church attendance. Gender, exercise and social status, for example, can change lifespans by ten to fifteen years or more (Lantz, House, Lepkowski, Williams, Mero, & Chen, 1998). When one looks at medical spending, however, the usual⁴ finding in such studies is *no effect*. When

³And in fact, most of the studies may well be wrong (Ioannidis, 2005).

⁴Random errors and bad statistical modeling assumptions should and do give a few contrary results.

comparing nations or counties or individuals, people who get more medicine have no significant difference in health when compared to people who get less medicine.

For example, Jonathan Skinner and John Wennberg looked at five million Medicare patients in about 3500 hospital service areas in 1990. They looked to see if people died less in areas where, during the last six months of life, Medicare spent more on treatment. After controlling for age, sex, race, median income, poverty, education, urbanization, and initial health limitations, Skinner and Wennberg found that the average effect of spending \$1000 more was somewhere between increasing lifespan by about five days and decreasing it by about fifteen days.⁵ Areas that kept patients in the intensive care unit one more day on average reduced lifespan by between fifteen and seventy five days (Skinner & Wennberg, 2000).

Of course all these correlations-in-the-world studies have flaws. It is never entirely clear what is the cause and what is the effect, and one can always think the results would have changed had more variables been included in the study. This is why randomized trials are so important; randomization controls for everything. And it turns out that we have at least one large randomized trial on the overall health effects of medicine: the RAND health insurance experiment.

In the late 1970s, most of 5816 non-elderly adults⁶ from six U.S. cities were randomly assigned for three to five years to one of two situations. Either they had free health care, or they had to pay a substantial fraction (ranging from 25 to 95 percent) of their health care costs. People with free health care had more doctor and hospital visits, and those with free care spent about 75% more than those who paid nearly full price. While this sample was too small to see effects on death rates, the plan was to look at a general health index based on over twenty health indicators (Newhouse & Group, 1993).

What did they find? The bottom line: no significant difference in general health was seen between those with more health care and those with less. And since this was a randomized, but not blind, clinical trial, this no-effect result includes any health benefits that people get from feeling that they are being cared more for via free care. This suggests that free care would look even worse without such placebo effects.

Breaking the data down by four subgroups, the closest result the RAND experiment found to being significant was that free medicine made initially-well poor people sicker (6% significant). Breaking the data eighty ways by health indicators, the RAND experiment found the following 5% significant results.⁷ On the positive side, free health care produced better vision from free eyeglasses, fewer decayed and more filled teeth in kids from free dental care, and lower blood pressure from regularly testing for this condition.⁸ On the negative side, free care also induced more restricted-activity days, when people could not follow their

⁵To convert risk ratios provided to lifespans, I use the estimate that risk ratios double roughly every decade.

⁶They chose to include more poor people than a random sample would contain.

⁷With eighty tries, four such results would on average appear by chance, even when there are no effects.

⁸After the experiment some researchers put together a “risk of dying” index based on smoking, cholesterol and blood pressure. They found no significant effect overall (between eight months longer and three months shorter lives), but for a certain high-index-group lifespan increased by about a year (3% significant).

normal routines. And in the sickest quarter of patients, free care made their acne and hearing worse.

Thus while there may be health benefits from wearing eyeglasses, filling decayed teeth, and regularly checking blood pressure, the RAND experiment found no net health benefit from all the other health care that having free care induced people to get. While some subgroups may have benefited, either those groups were very small, or other subgroups suffered harms of a similar size.

The RAND experiment and all the other correlations-in-the-world studies only speak directly to the health effects of “marginal” medical care, i.e., the care that the studies saw some people get and other people not get. But the RAND experiment does give us some clues about the health effects of common care, the care that everyone in that experiment got. Common care (the first two-thirds of spending for those with free care) and marginal care (the last third of spending for those with free care) had the same fraction of “inappropriate” hospital admissions and care-days, as judged by doctors reviewing cases, and also the same fraction of major and catastrophic disease presentations, relative to moderate and asymptomatic disease manifestations.

Thus it is clearly *not* the case that marginal care contains mostly treatments that doctors know to be less useful and more frivolous, while the serious situations where doctors know medicine is very valuable are usually in common care. In fact, doctors do not seem to see a difference between common and marginal care. So, if common care is much more useful on average than the useless-on-average marginal care, it must be because each patient somehow knows something that doctors cannot see about when he really needs to see a doctor. Now how likely is that?

But what about those miracles of modern medicine we have all heard so much about? Did not the introduction of antibiotics, for example, dramatically reduce death rates for key diseases? Well, not much actually. If you look at graphs of death rates versus time for those key diseases, you usually cannot see any change in the trend near the dates when famous treatments were introduced to “cure” those diseases (McKinlay & McKinlay, 1977). Lifespans have more than doubled in the last century or so, and medicine cannot claim credit for much more than a year or so of that increase (Bunker, Frazier, & Mosteller, 1994).

If medicine for treating individuals is not quite the miracle we have heard, does public health make up the difference? Have not we all heard how the introduction of modern water and sewer systems greatly improved our ancestors’ health? Well, a century ago the U.S. cities with the most advanced water and sewer systems had *higher* death rates than the other cities. Also, we can look today at how the death rates of individual households correlates with the water sources and sewer mechanisms used by those households. Even in poor countries with high death rates, once we control for a few other variables like social status we usually find that water and sewer parameters are unrelated to death rates (Lee, Rosenzweig, & Pitt, 1997).

Well we must live longer now for some reason, right? Yes, and in fact in the developed nations it seems that age specific death rates have fallen at a relatively⁹ steady exponential

⁹Deviations from this steady trend last less than about two decades.

rate for at least a century (Lee & Carter, 1992; Tuljapurkar, Li, & Boe, 2000). But the fact is that we just do not know why we now live so much longer.

Most of the obvious theories have serious problems, you see. For example, exercise, smoking, social status, and urban living appear to have large effects on individuals. But the time trends for exercise, urban living, and smoking have been in the wrong direction - those trends would predict decreasing lifespan. And since social status is usually thought to be relative to contemporaries, it is hard to see how average social status can increase with time.

Finally, while the biggest advances in nutrition, medicine, and public health seem to have occurred during the first two thirds of the twentieth century, death rates have fallen just as fast during the last third of the twentieth century. Perhaps some new influence rose in importance just as those other influences became less important, but if so it seems a remarkable coincidence that the total rate of improvement has remained pretty steady.

If everything I have told you here has long been well known to specialists, why have you never heard it before? The fear of death is a powerful influence on our thinking, even if we are not often conscious of it. Our society, like all others before it, has a strong need to feel in control of death, even if we must embrace fairy tales and quack cures to gain that sense of control. The idea that we mostly do not understand and cannot control death is just not a message that people want to hear. The message that medical miracles can control death, in contrast, is a message that people do want to hear.

So we now spend 15% of our national income on medicine, even though a third of that spending has been clearly demonstrated to be on average useless, and even though we have good reasons to doubt the value of most of the other two-thirds. Furthermore, we seem relatively uninterested in living longer by trying the things that our evidence suggests do work, like gaining high social status, exercising more, smoking less, and living in rural areas. Such apparently effective approaches to increasing lifespan just do not have the magic allure of conquering death via medical miracles. We know that exercise will not save us when we are at death's door, in the way that we hope that medicine might.

While we project our hopes onto medicine, we avert our eyes from it. We eagerly hand over our death decisions to doctors, and then think about other things. We show surprisingly little interest in information about which particular doctors, hospitals, or treatments are more or less effective. For example, eighty percent of heart surgery patients were not willing to pay fifty dollars for information about local hospital mortality rates, information that should have been worth tens of thousands of dollars to them (Schneider & Epstein, 1998). It feels easier to just trust our doctor, rather than have to think about death.

Unfortunately, even if you believe everything that I have said, your behavior will probably not change much as a result. You will still spend nearly as much on medicine for yourself and your family, and spend much less effort on the more effective ways to increase lifespan. After all, your sick family would consider it the worst kind of betrayal if you did not "do something," and give them all the medicine that your doctor recommends (Hanson, 2002). Alas, the problem of the fear of death muddling our thinking is so much worse than we imagined.

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