Pearson New International Edition

How to Think Straight About Psychology

Keith E. Stanovich

Ninth Edition

ALWAYS LEARNING

PEARSON

Pearson New International Edition

How to Think Straight About Psychology
Keith E. Stanovich
Ninth Edition

PEARSON

A jumbo jet's worth of people die in passenger cars on our nation's highways every week, *yet we pay no attention.* This is because the "Jumbo Jet's Worth of People Who Die" are not presented to us in a vivid way by the media. Hence, the 350 people who die *each week* in passenger cars (plus the additional 330 who die *each week* in trucks and on motorcycles) have no vividness for us. We don't talk about them at the dinner table as we do when a jet goes down and kills a lot of people. We do not debate the safety and necessity of car travel as we would the safety of the air traffic system if a jumbo jet crashed every week killing 350 people each time. The 350 are not on the news because they are distributed all over the country and, thus, are a statistical abstraction to most of us. The media do not vividly present to us these 350 deaths because they do not happen in the same place. Instead, the media present to us (occasionally) a number (e.g., 350 per week). This *should* be enough to get us thinking, but it is not. Driving automobiles is an extremely dangerous activity, compared to almost any other activity in our lives (Galovski, Malta, & Blanchard, 2006; National Safety Council, 2001; Sunstein, 2002), yet there has never been a national debate about its risk relative to the benefits involved. Is this an acceptable toll for a suburban lifestyle that demands a lot of driving? We never ask the question because no problem is recognized. No problem is recognized because the cost is not presented to us in a vivid way, as is the cost of airline crashes.

Think of the absurdity of the following example. A friend drives you 20 miles to the airport where you are getting on a plane for a trip of about 750 miles. Your friend is likely to say, "Have a safe trip," as you part. This parting comment turns out to be sadly ironic, because your friend is *three times more likely to die in a car accident on the 20-mile trip back home than you are on your flight of 750 miles.* It is the vividness problem that accounts for the apparent irrationality of person A's wishing person B safety, when it is person A who is in more danger (Sivak & Flannagan, 2003).

These examples are not just hypothetical. Subsequent to the terrorist attacks of September 11, 2001, travel by airlines decreased because people were afraid of flying. Of course, people continued to travel. They did not just stay home. They simply took their trips by other means—in most cases by automobile. Since automobile travel is so much more dangerous than flying, it is a statistical certainty that more people died because they switched to driving. In fact, researchers have estimated that at least 300 more people died in the final months of 2001 because they took trips by car rather than flew (Gigerenzer, 2004, 2006). One group of researchers was able to come up with a vivid statistic to convey just how dangerous driving is. Sivak and Flannagan (2003) have calculated that for driving to be as dangerous as flying, an incident on the scale of September 11 would have to occur once a month!

Misleading personal judgments based on the vividness of media-presented images are widespread in other areas as well. Studies have surveyed parents to see which risks to their children worried them the most

(Cole, 1998; Radford, 2005). Parents turned out to be most worried about their children being abducted, an event with a probability of 1 in 700,000. By contrast, the probability of their child being killed in a car crash, which the parents worried about much less, is well over *100 times more likely* than their child being abducted. Of course, the fears of abduction are mostly a media-created worry. Cognitive psychologist Paul Slovic lamented our inability to worry about the right things: "We don't have the same sense of dread around cars that we do around carcinogens" (Fountain, 2006, p. 15).

Likewise, risks that we face such as the possibility of developing diabetes cause less worry than risks such as developing staph infections in hospitals, even though the former will affect 45 million Americans and the latter only 1,500 in a year (Fountain, 2006). This is despite the fact that, personally, we can do something about the former (by changing our diet and exercising) but not the latter. Because of the dominance of vivid stimuli, argues Paul Offit (2008), "people are more frightened by things that are less likely to hurt them. They are scared of pandemic flu but not epidemic flu (which kills more than 30,000 people a year in the United States); of botulism tsunamis, and plagues but not strokes and heart attacks; of radon and dioxin but not French Fries; of flying but not driving" (p. 217).

Just how easy it is to exploit vividness to skew our perception of risk was shown in a study (Sinaceur, Heath, & Cole, 2005), in which subjects were presented with the following hypothetical situation: "Imagine that you have just finished eating your dinner. You have eaten a packaged food product made with beef that was bought at the supermarket. While listening to the evening news on the television, you find out that eating this packaged food may have exposed you to the human variant of bovine spongiform encephalopathy (BSE)." After reading this, the subjects were asked to respond on a seven-point scale to the following questions: "After hearing this, to what extent would you decrease your consumption of this type of packaged beef?" and "To what extent would you alter your dietary habits to de-emphasize red meats and increase the consumption of other foods?" Not surprisingly, after hearing this hypothetical situation, subjects felt that they would decrease their consumption of beef. However, another group of subjects was even *more* likely to say they would decrease their consumption of beef when they heard the same story identically except for the very last words. Instead of "human variant of bovine spongiform encephalopathy (BSE)," the second group read "human variant of Mad Cow Disease." It is clear what is going on here. Our old friend vividness is rearing its head again. Mad Cow Disease conjures creepy imagines of an animal-born disease in a way that bovine spongiform encephalopathy does not.

The vividness of presentations can even affect the way we interpret scientific evidence itself. In one study, subjects were given descriptions of psychological phenomena and explanations for those phenomena (Weisberg, Keil, Goodstein, Rawson, & Gray, 2008). Some of the explanations were good ones (involving actual psychological concepts) and others were poor ones

(simply redescribing the phenomenon in a circular fashion rather than explaining it). Ratings of the quality of both types of explanations (especially the poor ones) were substantially higher when the explanations were preceded by the words "brain scans indicate." Likewise, McCabe and Castel (2008) found that the conclusions of scientific experiments in cognitive neuroscience were rated as more credible if they contained a brain image summarizing the results instead of a graph depicting the identical outcome. In short, the vividness of the presentation of scientific results influences how the research is evaluated.

The Overwhelming Impact of the Single Case

Psychologists have extensively studied the tendency for people's judgments to be dominated by a single, salient example when more accurate information is available. Wilson and Brekke (1994) demonstrated how insidious the vividness problem is and also how it influences actual consumer behavior. They investigated how people were influenced by two different types of information about two different brands (brand A and brand B) of condom. One type of information was a survey and analysis in *Consumer Reports* magazine, and the other was the opinions of two university students about their preferences for condom brands. First, Wilson and Brekke surveyed a group of subjects on which type of information they would want to be influenced by. Over 85 percent of the subjects said that they would *want* to be more influenced by the *Consumer Reports* article than by the opinions of the two students. A similar group of subjects were then recruited for a study in which they were told that they would be given, free of charge, some condoms of their own choosing. The subjects were told that they could consult either or both of two types of information: a survey and analysis in *Consumer Reports* magazine and the opinions of two university students about their preferences. Even though less than 15 percent of a similar group of subjects wanted to be influenced by the opinions of the two students, 77 percent of the subjects requested *both* types of information. Apparently the subjects could not resist seeing the testimonials even though they did not believe that they should be affected by them. And they were indeed affected by them. When the subjects chose to see both types of information and the recommendations of the two sources of information differed, 31 percent of the subjects chose the brand of condom recommended in the student testimonials over the brand recommended by *Consumer Reports.*

Another example of how people respond differently to vivid anecdotal information comes from the media coverage of the Vietnam War in the mid to late 1960s. As the war dragged on and the death toll of Americans killed continued without an end in sight, the media took to reporting the weekly number of American service personnel who had been killed that week. Week after week, the figure varied between 200 and 300, and the public, seemingly, became quite accustomed to this report. However, one week a major magazine

published a spread, running on for several pages, of the individual pictures of those persons who had died in the previous week. The public was now looking, concretely, at the approximately 250 individual lives that had been lost in a typical week. The result was a major outcry against the toll that the war was taking. The 250 pictures had an effect that the weekly numbers had not had. But we, as a society, must overcome this tendency not to believe numbers—to have to see everything. Most of the complex influences on our society are accurately captured only by numbers. Until the public learns to treat these numerical abstractions of reality as seriously as images, public opinion will be as fickle as the latest image to flicker across the screen.

History repeated itself in 2004 when the *Nightline* television program ran the names and photographs of the over 700 soldiers who had died at the time of the first anniversary of the start of the Iraq war. This was exactly the same format that the *Nightline* program had used when it ran the names and photographs of the victims of the September 11 attack on its first anniversary. Both sets of photographs were run with the permission of the families of those pictured. However, the photos of the dead soldiers drew howls of protest from supporters of the war. There were charges that the show's host, Ted Koppel, was hostile to the war, but these charges were misplaced because Koppel had not been opposed to the war. Instead, Koppel said that "Some of you are convinced that I am opposed to the war. I am not, but that's beside the point. I am opposed to sustaining the illusion that war can be waged by the sacrifice of the few without burdening the rest of us in any way" (CNN.com, 2004). It is not that the number who had died had not been reported. That over 700 had died to that point was reported day after day in every newspaper in the country. But both sides in this controversy knew that the public had, in some sense, not yet "processed" that number—had not yet calculated the cost because the number was an abstraction. Both sides knew that many people would really become conscious of the costs—would really only process the information for the first time—when they had seen the pictures.

But it is not only the public that is plagued by the vividness problem. Experienced clinical practitioners in both psychology and medicine struggle all the time with the tendency to have their judgment clouded by the overwhelming impact of the single case. Writer Francine Russo (1999) describes the dilemma of Willie Anderson, an oncologist at the University of Virginia. Anderson is an advocate of controlled experimentation and routinely enrolls his patients in controlled clinical trials, but he still struggles with his own reactions to single, salient cases that have an emotional impact on his decisions. Despite his scientific orientation, he admits that "when it's real people looking you in the eye, you get wrapped up in their hopes and your hopes for their hopes, and it's *hard*" (p. 36). But Anderson knows that sometimes the best thing for his patients is to ignore the "real person looking you in the eye" and go with what the best evidence says. And the best evidence comes from a controlled clinical trial, not from the emotional reaction to that person looking you in the eye.

In summary, the problems created by reliance on testimonial evidence are ever present. The vividness of such evidence often eclipses more reliable information and obscures understanding. Psychology instructors worry that merely pointing out the logical fallacies of reliance on testimonial evidence is not enough to provide a deep understanding of the pitfalls of these types of data. What else can be done? Is there any other way to get this concept across to people? Fortunately, there is an alternative—an alternative somewhat different from the academic approach. The essence of this approach is to fight vividness with vividness. To hoist testimonials by their own petard! To let testimonials devour themselves with their own absurdity. A practitioner of this approach is the one, the only, the indubitable Amazing Randi!

The Amazing Randi: Fighting Fire with Fire

James Randi is a magician and jack-of-all-trades who has received a MacArthur Foundation "genius" grant. For many years, he has been trying to teach the public some basic skills of critical thinking. The Amazing Randi (his stage name) has done this by exposing the fraud and charlatanism surrounding claims of "psychic" abilities. Although he has uncovered many magicians and conjurors masquerading as psychics, he is best known for exposing the trickery of Uri Geller, the psychic superstar of the 1970s. Bursting on the scene with his grand claims of psychic powers, Geller captivated the media to an extraordinary degree. He was featured in newspapers, on television shows, and in major news magazines on several continents (Geller is still around, writing books; Radford, 2006). Randi detected and exposed the common and sometimes embarrassingly simple magic tricks that Geller used to perform his psychic "feats," which included bending keys and spoons, and starting watches—mundane fare for a good magician. Since the Geller exposé, Randi has continued to use his considerable talents in the service of the public's right to know the truth in spite of itself by exposing the fallacies behind ESP, biorhythms, psychic surgery, levitation, and other pseudosciences (Randi, 1983, 1995, 2005; Sagan, 1996).

One of Randi's minor diversions consists of demonstrating how easy it is to garner testimonial evidence for any preposterous event or vacuous claim. His technique is to let people be swallowed up in a trap set by their own testimonials. Randi makes much use of that fascinating American cultural institution, the talk show, often appearing as a guest in the guise of someone other than himself. On a New York show a few years ago, he informed the audience that, while driving through New Jersey earlier in the day, he had seen a formation of orange V-shaped objects flying overhead in a northerly direction. Within seconds, as Randi put it, "the station switchboard lit up like an electronic Christmas tree." Witness after witness called in to confirm this remarkable sighting. Unfortunately for them, the "sighting" was only a product of Randi's imagination. Callers provided many details that Randi had "omitted," including the fact that there had been more than

one pass of the "saucers." This little scam illustrates how completely unreliable are individual reports that "something happened."

On a different radio show, Randi demonstrated the basis for the popularity of another pseudoscience: biorhythms (Hines, 1998, 2003). One listener agreed to keep a day-by-day diary and compare it with a two-month biorhythm chart that had been prepared especially for her. Two months later, the woman called back to inform the audience that biorhythms should be taken very seriously because her chart was more than 90 percent accurate. Randi had to inform her of the silly mistake made by his secretary, who had sent someone else's chart to her, rather than her own. However, the woman did agree to evaluate the correct chart, which would be mailed to her right away, and to call back. A couple of days later, the woman called back, relieved. Her own chart was just as accurate—in fact, even more accurate. On the next show, however, it was discovered that, whoops, another error had been made. The woman had been sent Randi's secretary's chart rather than her own!

Randi's biorhythm scams are actually an example of a phenomenon that has been termed the *P. T. Barnum effect* (Barnum, the famous carnival and circus operator, coined the statement "There's a sucker born every minute"). This effect has been extensively studied by psychologists (e.g., Dickson & Kelly, 1985), who have found that the vast majority of individuals will endorse generalized personality summaries as accurate and specific descriptions of themselves. Here is an example taken from Shermer (2005, p. 6):

> You can be a very considerate person, very quick to provide for others, but there are times, if you are honest, when you recognize a selfish streak in yourself. . . . Sometimes you are too honest about your feelings and you reveal too much of yourself. You are good at thinking things through and you like to see proof before you change your mind about anything. When you find yourself in a new situation you are very cautious until you find out what's going on, and then you begin to act with confidence. . . . You know how to be a good friend. You are able to discipline yourself so that you seem in control to others, but actually you sometimes feel somewhat insecure. You wish you could be a little more popular and at ease in your interpersonal relationships than you are now. You are wise in the ways of the world, a wisdom gained through hard experience rather than book learning.

Large numbers of people find this summary to be a very accurate description of their personality. But very few people spontaneously realize that most other people would also find it indicative of *themselves!* There are well-known sets of statements and phrases (like this example) that most people see as applicable to themselves. Anyone can feed them to a "client" as individualized psychological "analysis" and the client will usually be very impressed by the individualized accuracy of the "personality reading," not knowing that the same reading is being given to everyone. The Barnum effect is, of course, the basis of belief in the accuracy of palm readers and