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BLOGS

The Full Brain

Research on the mind and brain protects you from apathy and arrogance.
 by Nelson Cowan, Ph.D.



Nelson Cowan is Curators' Professor at the University of Missouri and conducts research on working memory, the small amount of information held in mind. [See full bio](#)

November 5, 2009, Cognition

Disproving Myself

Good theories are those you have honestly tried to disprove.

This is my first blog post for Psychology Today and I will jump right in. The already-active bloggers were asked for this month's print issue to describe one psychological finding that they have used to change their own behavior. My answer comes from an old study showing that people usually seek information that confirms their own theories rather than more helpfully seeking information that could disprove their theories. P.C. Wason examined this in 1960 in the Quarterly Journal of Experimental Psychology. Suppose I ask you to suggest the next item in the number series 2, 4, 6... I will tell you whether that number fits the rule I am using to generate the series, and you can keep asking different possible numbers. When you feel ready, you propose the rule - but your goal is to get the rule right the first time you propose it. If you say "8," I will say that it fits the rule. If, however, you then hasten to propose that the rule is "+2" you will be wrong. In fact, the rule I am using is "increasing whole numbers," and you would have to try to disconfirm the +2 rule in order to find that out. For example, if you suggested "9" I would still say "yes," but if you suggested "5" I would say "no." You need to try to disconfirm the apparent rules in order to find the true one.

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It is difficult to overstate the importance of this point in my thinking. The basis of superstitions and of many conventional religious beliefs, I must say, is that people are strongly motivated to seek confirming evidence and ignore potential disconfirming evidence. You may remember the times that you correctly guessed that the phone was going to ring but forget the times you made that prediction and nothing happened, or failed to predict that the phone would ring. You forget the social information that helped you to make a successful prediction. There is a sense of power and control if one can predict the future. It is also uncomfortable to go against a belief that all of your friends or loved ones seem to hold. They might think poorly of you for entertaining an idea that they happen to find absurd, so it is dangerous to think independently. I feel, though, that finding truth is one of the most important activities in life.

Even scientists fall for this trap of seeking confirming evidence, quite often. If a scientist has invested 20 years in support of a theory for which he or she has become famous, it is not easy or comfortable to focus on evidence that could disprove that theory. That must be done, though, and it will lead to a better theory. I try to do that with my scientific theories, which focus on short-term memory.

Also, on the political front, I am one of the few liberal-progressives I know who often watches Fox News. Many of my liberal friends say they cannot bear to watch, but I feel that I need ample contrarian input. I might even get convinced of a few important points that my friends could miss. I greatly admire Dennis Kucinich, a liberal congressman who ran for president and planned to have as his running mate Ron Paul, a libertarian-leaning Republican, because of the central importance at that time of the issues of liberty and fiscal responsibility that they shared, despite their differences on many other issues. Dennis surely must be fairly comfortable listening to disconfirming arguments.

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