NEW YORK POST
Updated: Sun., Mar. 4, 2012, 12:37 AM

The answer is ... science!

Last Updated: 12:37 AM, March 4, 2012
Posted: 12:23 AM, March 4, 2012

If you're looking for how to throw the perfect punch, you could turn to a boxing champ. Or you could turn to a physics professor, who may not know how to float like a butterfly but understands momentum and force. And who knows better how to lose weight — Oprah or a biologist?

That's the thought behind "Brain Trust" (Three Rivers Press), where author Garth Sundem interviews 93 scientists about everything from playing poker to surfing. Here, in an excerpt from the new book, are six special skills best solved with a lab coat.

... Win the lottery

Skip Garibaldi, mathematician, Emory University

Assuming drawings actually are random, science can't help you pick the winning numbers. But, that said, some fiendishly simple stats can make the dollar you put down likely to win back that dollar and more. Here's how.

"Find a drawing in which the jackpot is unusually large and the number of tickets is unusually low," says Emory mathematician Garibaldi. The March 6, 2007, Mega Millions drawing reached a record $390 million; 212 million tickets were sold.

Elaine and Barry Messner, of New Jersey, split the pot with truck driver Eddie Nabors, of Dalton, Ga., who, when asked what he would do with the money, famously said, "I'm going to fish."

But it was a bad bet.

Despite the massive prize, the huge number of tickets sold meant that a dollar spent on this lottery returned only $0.74 (versus $0.95 for roulette). In fact, Mega Millions and Powerball have never once been a good bet: Extreme jackpots generate extreme ticket sales, increasing the chance of a split pot — the average return on a $1 Mega Millions ticket is only about $0.55.

"But state lotteries don't get the same kind of press," says Garibaldi.

In rare cases, a state lottery jackpot will roll over a couple times without jacking ticket sales.

Here's the formula for finding a good lottery bet: Look for a jackpot that's rolled over at least five times and that remains below $40 million. It's a good bet that it's a good bet.

And by a good bet, I mean a positive expected rate of return — over time, a dollar invested returns more than a dollar. To wit: a $1 ticket for the March 7, 2007 Lotto Texas drawing had an expected rate of return of $1.30. That rocks.

Take a minute to scroll through online lottery listings till you find one that meets the criteria for a good bet.

OK, OK, so you finally found one — what now?

Pick the most unpopular numbers, that's what. By playing unpopular numbers you won't win any more or less often, but you'll less often split the pot with other winners.

Don't pick the number 1. It's on about 15% of all tickets.

Similarly, avoid lucky numbers 7, 13, 23, 32, 42 and 48. Better are 26, 34, 44, 45 and especially overlooked number 46. Avoid any recognizable pattern, but give slight preference to numbers at the edge of the ticket, which are underused. In mathematical terms, picking a unique ticket makes the jackpot look bigger.

... Get your spouse to do more housework

George Akerlof, economist, University of California-Berkeley

In a 2000 paper that Google Scholar shows cited 1,683 times and counting, Nobel Laureate and Berkeley economist Akerlof writes that in married couples, "When men do all the outside work, they contribute on average about 10% of housework. But as their share of outside work falls, their share of housework rises to no more than 37%."

In other words, even when the wife is the primary breadwinner, she's likely also to do more of the housework.

But why? Assuming spouses have equal bargaining power, they should settle on equal "personal utilities" — when utilities are out of whack, bad feelings ensue and to heal this rancor, fairness must be restored.

So, why do relationships in which the wife works more reach equilibrium when she also does most of the housework?

"Actually, it's simple," says Akerlof. "The idea is that in any situation, people have a notion as to who they are and how they

should behave. And if you don't behave according to your identity, you pay a cost."

In this model, the red-blooded American male takes a hit to his identity when his wife earns more money than he does, and a further hit when he does housework (the size of the hit commensurate with how much he's internalized the identity of "red-blooded American male"). To bring the "utilities" of husband and wife back into balance, she does more housework.

Similarly, the Army builds in recruits the identity of "soldier" and then the decision whether to charge is a balance with the chance of death sitting on one side and identity sitting firmly on the other. What's the greater penalty: the chance of death for charging or the identity loss for cringing? If the Army's done its job well, identity expectations of "soldier" overrule risk.

If you want your spouse to do more housework, you too will learn to socially engineer these things.

First, you can encourage your spouse to modify his or her identity. But instead of nagging or cajoling or straight talk aimed at changing your spouse's identity, find situations — friends, classes, TV shows, magazines, etc. — in which culture will do the work for you. People who cheer with the team become more cheerleader- like. Your challenge is to find the right team.

Or you can frame the desired behavior so that it aligns with the existing identity. For example, if you're a wife trying to get your husband to put dirty clothes in the hamper rather than strewn around the floor near the hamper, how can you align this behavior with the identity of a real man? Is hitting the hamper like making the winning three-pointer? Is doing housework sexy? Does efficiently loading the dishwasher require manly spatial skills that only he can provide? Thus framed in terms of manliness, he can clean without paying an identity cost for it.

If you're a husband trying to get your wife to do more housework . . . well, shame on you. (That said, these techniques should work equally well.)

... Make people laugh

Robert Provine, neuroscientist, University of Maryland-Baltimore County

Ever laugh to indicate uncertainty, as in "I wonder if anyone's thought of that . . . ha, ha, ha?" Or to disarm the person you're talking to, or to signal understanding?

Provine, author of "Laughter: A Scientific Investigation," has spent thousands of hours cataloging similar uses of laughter, from campus gathering places to high-school cafeterias to mall food courts. His findings include the facts that speakers are about 46% more likely to laugh than listeners, laughter is 30 times more likely in social situations than when alone, laughter frequently takes the place of periods or commas, and only 10% to 15% of prelaugh comments are even remotely funny.

"Actually," Provine says, "laughter is more about relationships than jokes." Human laughter evolved from the grunts and snorts of playing apes, who use these vocalizations to signal social inclusion.

Sure, you may overlay the trigger of a punch line or a wry aside or a pun or a surprising observation, but if you want to bring the funny, you have to first become part of the pack. That's why so many jokes start with "There I was, standing in line at the grocery store," or "Don't you just hate airplane seats?" or other descriptions meant to create the bond of shared experience between joker and jokee.

"We don't laugh at Jay Leno because he's funny," says Provine. "We laugh because we empathize with Jay Leno."

So, if you want to make people laugh, instead of practicing your punch lines, practice your empathy and listening skills.

... Eat for 8 hours and lose weight

Satchidananda Panda, regulatory-biology specialist, Salk Institute

Electric lights and television have made us fat, says Panda, regulatory-biology specialist at the Salk Institute.

The first reason for this is obvious: If you're awake more, you eat more. Panda points out that Americans consume 30% of their daily calories after 8 o'clock at night.

But the effects of this nighttime munching go a step further than simply packing on extra pounds.

Among your liver's many functions is storing excess calories as glycogen and then, when you're starving, converting this glycogen into usable glucose. Actually, it's the liver's little autonomous mitochondria that do this, and like any population of millions of single-celled organisms, they're constantly dying and dividing, which in the case of your liver generally maintains a constant population. And, generally, it's at night, when their food-processing duties are (or should be) decreased, that these mitochondria do their dividing.

But the clock in your liver isn't a sundial — it doesn't simply monitor lightness and darkness and click through its organ functions based on time of day. Instead, "it gets information about time by when we eat," says Panda. Your liver needs to know when you've taken your last bite of the evening so that it can tell mitochondria it's safe to divide. "And if you eat all the time, the clock gets the clue too many times, it tries to adjust too many times, and it never knows when it's breakfast," says Panda.

Panda explored this with mice. Mice who are given the ability to eat for only eight hours a day quickly adjust their habits to consume the same number of calories as mice that are allowed to eat for 16 hours per day. So given an equal calorie count, you might not expect any health differences between eight-hour and 16-hour feeding mice. But eight-hour mice live longer.

And everyone knows that mice given a high-fat diet gain weight, right? But Panda's new work shows they don't — not if

they consume this high-fat diet in an eight-hour window.

“Look at 100-year-olds around the world, across all different diets, and across all different professions, and you find one common denominator,” says Panda. “They always stick to a scheduled feeding pattern, and they always have an early dinner followed by a defined fasting time.”

So, if you want to live long and prosper, don’t eat at night. If you want to lose weight on your current high-fat diet, eat your calories in an eight- hour window.

... Beg for money

Lee Alan Dugatkin biologist, University of Louisville

Whether or not you help someone in need comes down to three factors: (1) how much it costs you to help; (2) how much the person gains by your help; and (3) your genetic relatedness to the person in need.

This is the altruism equation: R x B > C. If relatedness times benefit outweighs cost, then you help.

Altruism makes sense “if you can somehow make up for the cost of being altruistic by increasing the chances that your genetic relatives survive and reproduce,” says Dugatkin, biologist at the University of Louisville and author of “The Altruism Equation.”

Of course, we don’t know who all our relatives are — yet we somehow intuit relationships based on many signals, not only of genetics but of cultural similarity.

This reliance on memes rather than genes to determine relatedness bodes well for your ability to fool others into being altruistic toward you, for while it’s rather cumbersome to change your genetic structure, changing your memetic structure — the ways you signal genetic similarity — is totally doable.

What’s the stereotypical, clichéd panhandling line? It’s “Brother, can you spare a dime?” By implying relatedness, the panhandler thumbs the scale of the altruism equation and makes it in your genetic interest to give.

As for benefit, you know the saying “It’s better to give than to receive,” which contains at least an element of truthiness. A person might not gain money by giving you a dime, but instead they might gain the admiration of a date, or giving a dime might allow your target to feel like a swell fellow.

Finally, think about the perceived worth of money: A quarter seems useful, while a dime is the first denomination that, for whatever reason, seems worth less than its face value. In other words, it seems like it costs $0.35 to give a quarter, while it only costs about $0.07 to give a dime.

So if you’re asking for anything — your boss for a raise, a stranger for a handout — imply relatedness, decrease the cost of giving and promise massive personal benefit to tip the scale of altruism in your favor.

... Throw a punch

Jearl Walker, physicist, Cleveland State University

“When I studied tae kwon do as a teenager, my master always told me to aim a forward punch inside my opponent’s body,” says Walker, Cleveland State professor and author of the classic book “The Flying Circus of Physics.”

And when he got the professor gig, he decided to investigate why. First, he filmed himself throwing forward punches and then measured the distance his hand traveled each frame to discover where the punch reached maximum velocity. Sure enough, a punching hand is fastest at 80% of arm extension. After that, it’s already slowing down to retract. Imagining a punch detonating behind the target’s surface helps to ensure maximum speed on impact.

But max speed is only one of three factors that make the perfect punch. Imagine the superfast flick of your finger— it’s annoying behind the ear, but it’s unlikely to cause real damage. “What you want is maximum pressure,” says Walker. This is high momentum applied over a small surface area, and it’s why many martial arts teach striking with the side of the hand or the four pointy knuckles of your bent fingers — decreased surface area is like whacking a person with a stiletto heel instead of the sole of a sneaker.

Ideally you’d punch with the fingertip of death, but unless you’ve trained for decades at a Shaolin temple, your one pointed finger is likely to crumple between your opponent’s sternum and your onrushing arm.

In addition to speed and outside of adjusting your fist size, the best factor to focus on when throwing a punch is the third piece of pressure — mass. Punch upward with a wide stance, allowing your legs to add force to the punch. Likewise lean forward with your body — it’s all about bracing your punch against the floor.

If you want to see the perfect punch in action, watch videos of Olympic shot- putters: a low crouch, a forward-leaning upper body, and a rotating torso, all with the aim of creating max force through one extended hand. A one-punch knockout comes from the legs.