(Continued)

2. We are far more likely to die in a car accident than in an airplane accident. Yet, people tend to fear flying more than driving. Explain why people fear flying more than driving even though driving is more dangerous.

   A: When a plane crashes, especially a commercial passenger plane, we hear about it on the news perhaps for several days after it happened. However, we are less likely to hear about car accidents on the news. Therefore, because of the availability heuristic, flying is often feared more than is driving even though driving is far more dangerous.

3. Vicks® VapoRub™ (Procter & Gamble, Cincinnati, OH) is medicine you can spread on your chest to help break up congestion. To me, it smells a lot like menthol cough drops. So as a kid when I had a cold, I ate the Vicks VapoRub. Use the representativeness heuristic to explain why I ate the VapoRub instead of spreading it across my chest as the product is supposed to be used.

   A: We make mental categories of things that seem to "go together." Here, both cough drops and VapoRub have a menthol smell (at least to me), so given that one is supposed to eat cough drops, I figured anything with a similar smell is supposed to be eaten as well.

4. Explain why people are more likely to carry their umbrellas when they hear there is a "20% chance of rain" than when there is an "80% chance it will be dry." Both phrases contain the same information, so why is there a difference in how people respond to them?

   A: This is an example of the framing effect. By hearing the word "rain," people think about getting wet. By hearing the word "dry," people do not think about getting wet. Therefore, the image of being wet prompts people to carry their umbrellas.

5. LeBron James, one of the best players in professional basketball, has challenged me to a game of one-on-one basketball. By using information about the law of small numbers, explain how I could maximize the likelihood that I beat James at his sport.

   A: Even the best basketball players will sometimes miss a shot. Even the worst basketball players will sometimes make a shot. Therefore, to maximize my chances of winning, which on the surface seem nonexistent, I would want to play just one shot against LeBron James. This is an application of the law of small numbers. Perhaps he'll miss his shot and I will make mine and, thus, win. The longer the game goes, the more likely I am to lose because he is the better basketball player.

6. Suppose I made you the following offer: You pay me $4, and I will flip a legitimate coin for which you call "heads" or "tails." If you call the flip correctly, I'll pay you $10. If you call it incorrectly, you get nothing. How many times, if any, would you play this game with me? Explain your reasoning.

   A: If you want to make a lot of money, you should play this game as often as possible. On average, you will call the flip correctly 50% of the time. When you do, you win $10. When you don't, you lose $4. Suppose you played this game twice, winning once and losing once. To play twice costs $8 ($4 each time). If you win only once, you walk away with $10, so you made $2. The more you play this game, the more money you will make. However, we know from the law of small numbers that you want to play it more than once or twice because it is possible you could end up losing money with a small number of flips. But over the course of many flips, you will win money.

7. What is the difference between a population and a sample?

   A: The population is larger than the sample. The sample is used to draw conclusions about the population, which is the entire group you want to learn about in a research study.

8. Why is blood pressure a variable?

   A: A variable is a characteristic that differs among members of a population. People have different blood pressure levels, so therefore it is a variable (and one of great interest to medical researchers).