Matt Freeman DNP, MPH

It was mid-morning on a Saturday. I had only hand luggage, and had checked in online the day before. I arrived at the small airport exactly one hour before departure. I was a bit annoyed that the flight was delayed, but otherwise not expecting too much trouble. It was a 90-minute flight on a 70-seat regional jet. Only one other flight, also a small regional jet, was departing from the same section of the airport.

By my best estimate, there were 80 passengers in line for the security checkpoint. Most seemed to be leisure travelers: families with little kids, older adults. There was an abundance of sunburn and golf shirts.

The queue inched along. As I looked around, anxiety was escalating. There was a lot of chatter about missing flights; several people were in tears knowing that they would certainly have their travel plans fall into disarray.

Twelve Transportation Security Administration (TSA) staff were working: one checking identity cards, two on either side of the x-ray machine, one operating the metal detector, seven chatting with each other, and one walking his way through
the increasingly antsy crowd.

“What is the province of your destination?” He asked the woman next to me.

“Province?”

“Yes, which province? British Columbia? Ontario?”

Confused, the woman replied, “I’m going to Houston. I don’t know what province that’s in.”

The TSA agent scoffed. He moved on to the next passenger. “The same question for you, ma’am. What is the province of your destination?”

The woman didn’t speak, handing over her driver’s license and boarding card, assuming that was what he wanted. He stared back with disdain.

There are no flights from this airport to Canada.

When it was my turn, I volunteered, “I’m going to Texas, not Canada.”

“What are the whereabouts of your luggage?” He asked.

“They’re whereabouts? My bag is right here next to me.”

“Yes, what are its whereabouts?”

“It’s right here.”

“And that’s its whereabouts?”

This was seeming like a grammatical question.

“And about its contents? Are you aware of them?”

“Yes,” I replied, quizzically.

He moved on.
I missed my flight. The woman next to me met the same fate. She cried. I cringed. We pleaded with the airline agent for clemency. The plane pushed back from the gate with many passengers waiting to be asked about the whereabouts of their belongings or their province of destination.

The agent asking the strange questions and delaying the flights was a part of “SPOT.”

The SPOT Program

In 2006, the TSA introduced “SPOT: Screening Passengers by Observational Techniques.” The concept was to identify nonverbal indicators that a passenger was engaged in foul play. Two years after the program started, the US Government Accounting Office (GAO) declared that, “no scientific evidence exists to support the detection of or inference of future behavior, including intent.”

The absence of evidence did not dissuade the TSA. Neither did another study in 2013, in which the GAO reported, “the human ability to accurately identify deceptive behavior based on behavioral indicators is the same as or slightly better than chance.”

The Department of Homeland Security, which oversees the TSA, has its doubts as well. The DHS inspector general reported in 2013 described the SPOT as follows: “[We] cannot ensure that passengers at United States airports are screened
objectively, show that the program is cost-effective, or reasonably justify the program’s expansion.” It is now three years since that statement, but the TSA is still playing the game, aware that they have no data nor agency backup to support their efforts.

SPOT is expensive too. The GAO reported that the program has cost more than $900 million since its inauguration. That is just the cost of training staff and operating the program, not the costs incurred by delayed or detained passengers.

The “Science” Behind Behavioral Techniques

The SPOT program was developed by multiple sources, but there is one most prominent psychologist in the field: Paul Ekman PhD.

Ekman published *Emotion in the Human Face*, which demonstrated that six basic human emotions: anger, sadness, fear, happiness, surprise, and disgust, are universally expressed on the human face. Ekman had travelled to New Guinea to show that facial expressions did not vary across geography or culture.

Ekman’s theory was undisputed for 20 years until Lisa Feldman Barrett PhD showed that Ekman’s research required observers to select from the list of six emotions. When observers were asked to analyze emotions without a list, there was some reliability in the recognition of happiness and fear. The other emotions could not be distinguished.

When confronted with skepticism from scientists, Ekman declined to release the details of his research for peer review. Ekman claims that his work is on the radar of scientists from China, Iran, and Syria, so it would be dangerous for him to disclose his findings. I guess I should not publish here that the atomic weight of hydrogen is 1.008 atomic mass units. Syrians could find out! Everyone, hide your physics and chemistry textbooks!

Charles Honts PhD attempted to replicate Ekman’s findings at the University of Utah. No dice. Ekman’s “secret” findings could not be replicated. Maria Hartwig PhD, a psychologist at City University of New York’s John Jay College of Criminal Justice, described Ekman’s work as, “a leap of gargantuan dimensions not supported by scientific evidence.”

The TSA’s own adaptation of Ekman’s work into SPOT is scientifically challenging because it can only be tested on those pretending to be terrorists. In other words, any attempt at scientific application of SPOT evaluation is based on those who are already engaged in deception. Even Ekman himself describes the TSA’s testing of his research as “totally bogus.”
Maybe I can boil this down: we have a psychologist whose research was refuted. And even the defamed psychologist has argued that the TSA’s application of his already dubious evidence is “bogus.”

When asked directly, a TSA analyst pointed to the work of David Givens PhD, an anthropologist and author. Givens has published popular works on body language, but Givens explained that the TSA did not specify which elements of his own theories were adopted by the TSA, and the TSA never asked him.

The TSA’s Response

When asked for statistics, TSA analyst Carl Maccario cited one anecdote of a passenger who was “rocking back and forth strangely,” and was later found to have been carrying fuel bottles that contained flammable materials. The TSA described these items as, “the makings of a pipe bomb,” but there was no evidence that the passenger was doing anything other than carrying a dangerous substance in his hand luggage. There was nothing to suggest that he planned to hurt anyone.

A single anecdote is not research, and this was a weak story at best.

When the GAO investigated further, they analyzed the data of 232,000 passengers who were identified by “behavioral detection” as cause for concern. Of the 232,000, there were 1,710 arrests. These arrests were mostly due to outstanding arrest warrants, and there is no evidence that any were ever linked to terrorist activity.

What Criteria Are Used in the SPOT Program?
In 2015, *The Intercept* published the TSA’s worksheet for behavioral detection officers.

I was obviously in deep trouble.

“Stress Factors” (one point for each)

- Avoids eye contact with security personnel (why do I need to make eye contact?)
- Excessive clock watching (yep; it was getting late.)
- Face pale from recent shaving of beard (I shaved that morning.)
“Fear Factors” (two points for each)

- Constantly looking at other travelers or associates (People were crying. Why would I not be looking around to see what was going on? Was I supposed to stare straight ahead? Nope. Can’t do that; staring also racks up points on the worksheet.)
- Scans area, appearing to look for security personnel (I was wondering why they weren’t working.)

“Deception Factors” (three points for each)

- Appears to be confused and disoriented (I was asked bizarre questions that required clarification)

I earned eight points, which assigned me to the highest risk category. If one followed the paperwork, I should have been referred for extensive screening and law enforcement was to be notified.

It would have been hard to find passengers in the line who did not exceed five points required to warrant a referral for additional screening.

Considering that the criteria include yawning, whistling, a subjectively fast “eye blink rate,” “strong body odor” and head turning, just about everyone reaches the SPOT threshold.

Mercifully, I was sent on to the screaming TSA agent at the metal detector and the man who was angry that I did not have a laptop. I was spared further scrutiny.

The Risk of Scoring

Looking past the absence of evidence, there are further problems with the SPOT worksheet. “Scored” decisions can detract common sense. For example, I have often lectured on suicide assessment. There are several analysis tools to help a clinician determine if a patient should be admitted to the hospital or allowed to go home. I always teach, “whatever you do, do not assign a score.” This offers a false sense of security without real clinical application. It doesn’t matter if a patient only gets a five out of 20 if he takes his own life after you discharge him or her.
The Fourth and Fifth Amendments

The Fourth Amendment protects Americans from “unreasonable” search and seizure. But airport security falls under the category of a “consent search,” which is voluntary. The Fourth Amendment does not apply because the search is conducted outside the setting of an arrest, and the passenger has “consented” to a TSA search.

1. The courts ruled that a passenger consents to inspection either by presenting his or her identification and boarding card to the TSA, or by placing his or her belongings on an x-ray conveyor belt. The SPOT interviews take place before either of these steps, when passengers have not yet entered the TSA’s “custodial” area.

2. The extent and detail of the search is not explicit. A reasonable passenger would have the expectation that he or she will be subject to some form of inspection of their hand luggage, a metal detector, or a full body scanner. Is it reasonable to assume that passengers can expect to be interviewed?

What about the Fifth Amendment? Since the Bill of Rights does not apply at the checkpoint, a passenger could easily self-incriminate.

3. TSA staff are not law enforcement officers and have no powers of arrest. But they use the term “officer” and wear badges. (This has been subject to controversy by bona fide law enforcement officers.) The notion of a “consent search” is by no means explicit at any checkpoint.

Conducting an interview with the appearance of a law enforcement role exploits a loophole. There is no Fourth Amendment because the interview is not conducted by a law enforcement officer. There is no right to an attorney, no right to remain silent because the interviewer merely has the appearance of a police officer.

The bottom line: the TSA is not actually law enforcement but they do have the power to prevent a passenger from boarding an airplane. One has to submit to SPOT investigation in order to fly. Even if one has not even begun the screening process on constitutional grounds, and even if the nature of one’s consent is by no means informed.

Above all, the “search”—the interview—has not been shown to be any better than chance alone at detecting a dangerous passenger.
**Low-Hanging Fruit**

My friend Grace is a great physician. She is a warm, brilliant, and talented colleague. We have been friends for decades. She grew up in the Midwest to all-American parents. She has an amazing sense of humor and a charming personality.

Grace went to visit her parents in Michigan, and flew there without incident. On her way home, a SPOT agent saw her in line at the entrance to the security checkpoint.

She was pulled aside, taken to a separate room, and interviewed by two TSA staff with seemingly meaningless questions. Her boarding card had not been flagged; she was taken out of line before she had even entered the screening area.

She missed her flight.

Rattled and confused, Grace called and asked what could have happened. We agreed that she was a target for several reasons: attractive, thereby capturing the interest of male TSA agents, who could have her alone in a room and get to know her. And we agreed that she was “low-hanging fruit:” someone who would be articulate enough to answer questions, unlikely to unleash anger, and unlikely to question the TSA’s judgment.

The TSA denies that SPOT agents have a quota to follow. But SPOT agents have stated that they were under the impression that a promotion was more likely if they pulled more passenger aside.

This was not about security, not quite in line with a “consent search,” and really had to do with either getting a promotion or perhaps scoring a date.

**SPOT Around the World**

Since the 1980s, the US Government has required US air carriers to conduct profiling techniques for flights destined to the United States. This applies to flights form
designated “higher risk” points of origin: anywhere mostly Europe, South America, and the Middle East.

Using techniques comparable to the SPOT program, security contractors conduct interviews at the check-in counter and boarding gates. Many European carriers use the same system for flights from the developing world to Europe.

The largest contractor, ICTS, and its affiliates, claim to follow an Israeli model of threat detection: behavioral analysis. The company was founded by Israeli security “experts,” and theoretically models its behavioral profiling system following an Israeli model.

Their track record abysmal.

In 1988, passengers checking in at Frankfurt Airport for Pan Am flight 103 were questioned by security staff, supposedly looking for behavioral profiles akin to SPOT techniques. The staff spoke inadequate English to understand responses. They were given stickers to identify passengers who should be subject to further scrutiny (“selectees,”) but the screening staff did not even know what a “selectee” was, so they just assigned the stickers at random. Two hundred forty-three passengers and 16 crew died when a bomb exploded aboard the second segment of the flight.

On 21 December 2001, Richard Colvin Reid checked in at Terminal 2A at Paris Roissy/Charles de Gaulle Airport. American Airlines’ contract security agents were wary of Reid’s appearance and evasive answers to their questions. After consultation with the French Police, Reid was given a ticket for a flight the following day. He boarded American Airlines flight 63 with his shoes loaded with plastic explosives.
Seven years later, Umar Farouk Abdulmutallab passed through a document inspection and security interview by KLM contract security staff in Lagos. He was then interviewed and searched by Delta Air Lines’ contract security agent, ICTS, at Amsterdam Airport Schipol. The interview did not arouse enough suspicion to warrant further search or inspection, and Abdulmutallab boarded Delta Air Lines flight 253 with explosives in his underwear.

At least Reid and Abdulmutallab did not harm anyone.
On 14 December 1999, “Benni Antonie Noris” arrived in Port Angeles, Washington in a green Chrysler 300M. Customs officer Diana Dean asked where he was headed. In broken English, Noris stated that he was headed to Seattle for a “business trip.” This made little sense since there are far more direct ways to travel from Vancouver to Seattle. Noris was fidgeting, jittery, and sweating. He began fidgeting and squirming, hiding his hands. His form of identification was a Costco Card.

**Port Angeles, Washington**

It did not require a SPOT form to give Diana Dean an indication that this driver’s behavior was atypical.

The driver was unable to articulate his plans in Seattle nor where he was staying. Dean described him as acting “hinky” (I had to look that word up in a dictionary. It should clearly be in wider use.)

Inside the trunk of his car, Dean kept the conversation going as she and a colleague inspected his car. It was loaded with nitroglycerine.

The driver turned out to be Ahmed Ressam, known as “The Millennium Bomber.” Ressam was on the verge of executing a plot to blow up Los Angeles International Airport on New Year’s Eve.

Diana Dean did not need a SPOT training notice a problem. This is a man who used his Costco card as identification and hid his hands. No need for “behavioral detection” techniques. Dean modestly claimed it was “dumb luck.” It was not luck; she just identified remarkably aberrant behavior. This was not a checklist of
The Israeli Method

As an Israeli national, I became accustomed to the envied security techniques employed at Israel’s four commercial airports.

The agents employed by the Israeli Airports Authority (IAA) do indeed “profile” passengers, but their efforts are often quicker, easier, and seem far more like the “Diana Dean Technique.”

IAA staff rank passengers from “1” to “6,” with the higher then number indicating the greatest amount of suspicion. I have only ever earned a number “1,” so I speak from the least intrusive end of the spectrum.

Instead of attempt to ensnare me in a trap with questions about the whereabouts of my bags or my province of destination, the questions are usually reasonable and fast. “Where have your bags been since you packed them?” “Did anyone give you anything to take with you?” “Are you carrying anything that could be used as a weapon?”

In some cases, the agents attempt to asses if a passenger is Jewish, but this is conducted in a roundabout way so as to circumvent religious profiling. Foreign travelers are asked, “Do you belong to a religious congregation?”

But the question is partially helpful as there are many Christian and Muslim tourists in Israel. Those travelling with a Christian tourist group are unlikely to arouse much suspicion.

In fact, I have only seen a few passengers earn a number “6.” These were American Christian young adults, who mentioned that they had travelled to Jordan, and they were given CDs by an acquaintance to bring back to the United States. They did not know was on the CDs. That is a case for Diana Dean. “You do not know the guy who gave these to you, nor do you know their what is on them?” I would have been skeptical too.

The IAA is cautious about race and religion. The worst attack on Israeli air transportation took place in 1972 at Ben Gurion Airport. Twenty-six people were killed. The assailants were Japanese, posing as tourists. Since that attack, the IAA has attempted to include ethnicity and religion only as components of its screening process.
Although many have published horror stories, the overwhelming majority of passengers do not encounter anything extraordinary at Israeli airports. The agents are usually young, bubbly, right out of their army service, and eager to show off any language skills they may have acquired.

*There is no “show.” There are no badges, nobody is called “officer,” and the goal is clear: keep the airport and flights safe.*

The staff joke, make small talk, and are typically make an effort to help those who are elderly, infirm, or traveling with small children. The goal is to screen for problems but do so expeditiously and without pretending to be anything other than airport security.

I have heard stories, especially from non-Jewish tourists, who were subject to greater questioning or detailed searches of their hand luggage. But I have never heard of a missed flight due to semantic tricks about the whereabouts of one’s luggage.

Although I do defend every aspect of Israel’s government, racial tensions, or the Palestinian conflict, I can say with certainty that I would not have missed my flight due to trick questions about the whereabouts of my bags or to which province I was headed. If I was running late, I am confident that the IAA staff would have done their best to mitigate the problem.
Is There a Better Answer?

Israel does not publish statistics, and I could not tell you if their system is any better. The difference is one of attitude: most of the IAA staff are kind, calm, and not interested in hassling anyone.

Moreover, Israeli airports protect their perimeters. There are two checkpoints before even entering Ben Gurion Airport. This reduces the risk of one of the TSA’s glaring loopholes: long lines of passengers waiting to enter a security checkpoint. It seems like a situation ripe for an attack. And it has happened before: in 1985, 19 people were killed and 100 wounded when terrorists attacked the TWA and El Al check in desks at Rome and Vienna Airports. The TSA lives in the strange assumption that only “sterile” areas of the airport are subject to an attack, thereby ignoring enormous public spaces.

Given the amount of air travel to, from, and within the United States, I doubt that questioning passengers would ever work. The TSA lacks the organization, multilingual skills, and service mentality of the Israel Airports Authority.

A crowded checkpoint at Seattle/Tacoma International Airport: mobs of people who have not been screened for weapons

The TSA already has one answer, but they chose not to use it in my case. I am a member of the Department of Homeland Security’s “Global Entry” program. This means that I was subject to a background check, interview, and fingerprinting. The Department of Homeland Security vetted my credentials and deemed that I did not present any extraordinary risks, and could therefore use its “PreCheck” lane. But this airport had decided to close its PreCheck lane that day. And their SPOT agent
had no knowledge that I had already been vetted through databases and fingerprints... arguably a more reliable system than having him determine if I blinked too rapidly.

Until 2015, the PreCheck program also meant that one need not pass through a full-body scanning machine, in part because the machines are famously slow and inaccurate. They are particularly problematic for those with disabilities and other medical conditions. But the TSA decided that it would switch to random use of full body scanners even for those passengers who had already been vetted. Lines grew longer; no weapons have been discovered.

Looking Forward

1. The SPOT program has been proven to be ineffective. There is no rational reason to keep it in place.
2. There must not be quotas or incentives for detailed searches and questioning in the absence of probable cause.
3. Passengers consenting to a search should have the right to know what the search entails, particularly if it involves odd interrogation techniques that can lead to missing one’s flight.
4. The TSA should respect previous court rulings that the search process begins when a passenger consents to being searched. Asking questions outside of the TSA’s custodial area of the airport is questionable for legal reasons.
5. Reduce lines. The attacks in Rome and Vienna were more than four decades ago, but that has not dissuaded the TSA. Get the queue moving quickly, thereby reducing the opportunity for an attack.
6. Stratified screening, such as the PreCheck program, makes sense. But it TSA staff elect to ignore the program, then it is no longer useful.

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**Squeezed: Four Decades of the Juice Myth**

Matt Freeman DNP, MPH
I used to live down the street from a juice stand named “Tamara.” The juice was mouth-watering: whatever combination you could imagine. The passion fruit had a perfect tang, the grapefruit was sour, the oranges were ripe and sweet. Situated at the corner of Dizengof Street and Ben Gurion Boulevard, “Tamara” was the ideal location in Tel Aviv. It was easily accessible *en route* to the beach, on the way back from the beach, or while out for a stroll.

“Don’t you wish we invented, Tamara?” asked my friend, Ariel. “They just have a shack, some fruit, and they hire good-looking students to serve up the juice for the equivalent of US $6.

Ariel and I would chuckle at the juice bar across the street, which was staffed by a schlubby guy. He never never had any customers. The Tamara brand exuded refreshing youthfulness.

Tamara never claimed to be anything but a juice bar. They served juice that tasted good; just a refreshing treat. They offered no illusion that they were serving some sort of magical elixir. To my knowledge, Tamara does not serve wheat grass.

An acquaintance, Nadav, made an odd claim about Tamara. “It’s a good place for smokers,” he explained. “They need the anti-oxidants so they do not get cancer.” Although not a smoker himself, quitting smoking did not seem to be on Nadav’s radar as a disease prevention strategy. And that’s when I started to think more about juice.

“I’ve gone back to juicing.”
I greeted one of my patients recently, and I asked how he had been feeling. “I’m in much better shape. I’ve gone back to juicing.” Paging Nadav.

In fact, many have embraced versions of Nadav’s scientific misconceptions. Oprah Winfrey, Mehmet Oz, Gwyneth Paltrow, and others have extolled the virtues of “juicing” as the key to a healthy weight and a healthy life. Forget flu vaccine, hand washing, seatbelts, or other self-explanatory measures to protect one’s health. The answer lies in juice.

Where does this appeal come from? Why has it been so sustainable?

**Juice and Cleansing**
Juicing—retail or homemade juice consumption—is frequently associated with the notion of “cleansing.” There are pervasive references for the need to cleanse the liver and colon.
Amid other functions, the liver converts fat-soluble toxins into water-soluble versions, which can be tossed into the colon via bile or into the kidney for excretion in urine.

The colon removes water and absorbs some nutrients, particularly vitamin K, B₁₂, thiamine, and ribovlavin.

The liver and colon do this regardless of what one eats or drinks. In fact, the concept of “detoxifying” the liver is not a possibility. The liver itself detoxifies, so it cannot be detoxified by an external source.

Catherine Collins, a National Health Service dietitian at St George’s Hospital in London put it best. “It’ll probably give you a chance to reassess your drinking habits if you’re drinking too much. But the idea that your liver somehow needs to be ‘cleansed’ is ridiculous.”

The liver would actually be dysfunctional if it were to be detoxified.

Cleansing advocates argue that toxins accumulate and line the interior of the colon. Moreover, these invisible toxins are weight-bearing and cleansing therefore leads to weight loss.

This is false. The colon is actually full of perhaps trillions of microbes: bacteria, fungi, and protozoa. In fact, the bacteria in the colon serve to produce a small but significant proportion of vitamins.

Bowel obstructions can form from a variety of sources, but this is really just a version of constipation: not an accumulation of “heavy toxins.” A total detoxification of the colon would be disastrous in terms of eliminating beneficial...
bacteria (so called “normal flora.”) Microbes, by definition, are “microscopic,” and so they just cannot be large enough to contribute to body weight.

The Origins of Fruit- and Juice-Based Diets

According to restaurant analyst Andrew Freeman, the most significant introduction of juicing in popular culture was the Beverly Hills Juice Club in 1975. (I know Andy Freeman. He is a great guy. But we are not related—at least as far as we know.) Coincident with a resurgence of American “vitamania” in the late 1970s, juice became allied with the notion that it is a gateway to missing nutrients, and thus a ticket to better health.

The Beverly Hills Juice Club also shortly predated the “Scarsdale Medical Diet,” introduced in 1978. A bestseller, the Complete Scarsdale Medical Diet was the first “ultra low calorie diet.” Although not juice-specific, the Scarsdale Medical Diet permitted “sliced fruit: as much as desired.”

The Complete Scarsdale Medical Diet

The Complete Scarsdale Medical Diet was the invention of Herman Tarnower MD, a cardiologist. Whether deliberate or not, Tarnower’s low-carbohydrate, low-calorie, but fruit-permissive diet was remarkably reinforcing. Diet followers enjoyed significant weight loss at the beginning of their adoption of the diet plan. It is, in fact, the same technique used by pretty much any popular diet: caloric restriction. By swapping half a grapefruit for a meal, Scarsdale dieters were limiting themselves to fewer than 1,000 kilocalories per day.

The body responds with as one might expect in a state of starvation: it digs into energy stored as glycogen. Glycogen itself is connected to water, so there is a substantial fluid loss during the first week or two. The grapefruit or unlimited sliced fruit are not magic: it is just fluid loss.

One of Tarnower’s diet followers was his girlfriend, Jean Harris. Headmistress of the Madeira School in McLean, Virginia, Harris was losing extra pounds on the Complete Scarsdale Diet.

There was one additional element that “completed” the diet: amphetamines. Tarnower was prescribing speed for Harris, which undoubtedly led to further weight loss. The drugs also contributed to her shooting Tarnower to death in 1980. (Not to name drop again, but Jean Harris and I grew up on the same street.)

Over the coming decades, various reincarnations of The Complete Scarsdale Medical
Diet surfaced. All of them followed the same caloric restriction model.

Fruit and juice, however, came to the forefront with *The Beverly Hills Diet.*

**The Beverly Hills Diet**

Introduced in 1996, the Beverly Hills Diet was another bestseller. The diet was the invention of Judy Mazel, who had no formal education or credentials in nutrition or the health sciences.

The first ten days of the Beverly Hills Diet are limited to fruit. The diet actually *encourages* diarrhea, claiming that it is a sign that the diet is working. Just like the others, the fluid loss from diarrhea provides an immediate—but not sustainable—weight loss. The starvation-based approach of The Complete Scarsdale Medical Diet seems benign in comparison with a diarrhea-based diet. According to the World Health Organization, diarrhea is the seventh leading cause of death worldwide (1.5 million deaths per year.)

I cannot help but recall my friend Kristen’s stories from med school. She had gone on some sort of educational program to Ecuador. She referred to a particular item at the breakfast table as “diarrhea juice.”

The Beverly Hills Diet later gave way to the Atkins, South Beach, and Paleo diets, all of which are variations on the caloric restriction theme.

**Juice as a Nutritional Superpower**

The combination of fruit-based diets and the Beverly Hills Juice Club evolved into the idea of “juicing.” This became an accessible option as household juicers became more affordable and retailers began selling wider varieties of juice combinations. Pomegranate/açaí/blueberry smoothies are available at convenience stores. A countertop juicer sells for under $50.

No longer the domain of the Beverly Hills Juice Club, “juicing” became an option for everyone.

Authors of diet books were quick to capitalize on the availability of juice. One name emerged above all others: Joseph Mercola DO.
Dr. Mercola and the Juice Miracle

On his web site, http://www.mercola.com, Joseph Mercola extols may benefits of juice, particularly how it is preferable in comparison with whole fruits and vegetables. Mercola claims that juice is preferable because, “most people have impaired digestion as a result of making less-than-optimal food choices over many years.” Mercola does not explain the pathophysiology behind his claim: would French fry consumption in the past lead to an inability to digest a banana?

Mercola’s argument is that juice permits one to “pre-digest” nutrients thereby facilitating their absorption. The notion of “pre-digestion” plays upon the same idea that previous dietary indiscretions are irreparable, and that one must consume nutrients in liquid form only.

Mercola has some particularly bizarre claims about juice. He states that it increases energy by “optimizing” the body’s pH. The acid/base balance in the body is complex and constantly adaptive system. The stomach’s buffering mechanisms allow juice to remain acidic in the stomach, but this does go beyond the stomach. If the stomach could not buffer juice, our bodies would be in miserable acidic states. Optimal pH is maintained by the body regardless of what one eats or drinks.

Mercola’s acid/base claim connects with his even more curious assertion that juice provides the body with “structured water,” and “living water.” In an insult to those who have studied the most basic chemistry class, Mercola explains that juice comes as H$_2$O$_2$ not H$_2$O.

H$_2$O$_2$ is hydrogen peroxide. If one were to drink it, it just turns to foam, and eventually just to water. Water does not come in living or structured forms; water is always one oxygen atom and two hydrogen atoms.
Juice and Immunity

Mercola argues that juice “supercharges” the immune system, implying that a hyper-responsive immune system is favorable.

Immunity actually only comes two ways: deficient and adequate. There is no “supercharge” to the immune system. In fact, an inappropriately responsive immune response occurs in autoimmune diseases, in which the body attacks itself. These include systemic lupus erythematosus, scleroderma, Hashimoto’s thyroiditis, and others. The “supercharge” is to one’s detriment. Allergies, for example, a result of a “supercharged immune system.”

Commercial juice retailers are a bit more subdued. Jamba Juice argues that its Zinc and Antioxidant Boost “helps support your immune system” with a footnote, “These statements have not been evaluated by the FDA. These products are not intended to diagnose, treat, cure, or prevent any disease.” Tropicana omits the disclaimer, stating that an eight-ounce glass of its orange juice, “helps to support a healthy immune system.”

The only plausible way to argue “immune system support” from orange juice is that one might be spared from getting scurvy.

Mercola has a strange an futuristic explanation: “…juice supercharges your immune system” with “phytochemicals and biophotonic light energy.” I do not even know how to respond to that other than by asking, “what?”
An antioxidant “boost” is not just dubious, it is dangerous. Nadav’s “smokers need juice” theory is problematic because antioxidants can actually exacerbate lung cancer and increase the risk of death from cardiovascular disease. Antioxidants were long believed to reduce certain activity on the surface of cancerous cells. It seemed like a good idea until the Carotene and Retinol Efficacy Trial (CARET), in which people who were at high risk for lung cancer (smokers, those with a history of asbestos exposure) were given beta-carotene supplements. The CARET trial stopped before its planned end date because those participants who received antioxidant supplements had more cases of lung cancer. (Sorry to break the news to Nadav.)

**Juice and Alzheimer Disease**

Mercola states on his web site, that juice can “Support your brain health. People who drank juices (fruit and vegetable) more than three times per week, compared to less than once a week, were 76 percent less likely to develop Alzheimer’s disease, according to the Kame Project.

On the surface, the Kame project looks like a powerful endorsement for juice. In a study of 1,836 Japanese Americans in King County, Washington, who were followed
for nine years. Those participants who drank juice once or twice per week had a hazard ratio of developing probable Alzheimer disease of 0.26. Those who did not report juice consumption had a hazard ratio of 0.84.

But a hazard ratio isn’t a measure of relative risk. Relative risk is the probability of an event occurring in an exposed group (juice drinkers) compared with an unexposed group (those who did not drink juice twice a week). For example, smokers have a relative risk of 20 of developing lung cancer: their risk twenty times that of nonsmokers.

Hazard ratios express the rate of an event occurring in one population (juice drinkers) versus a control population (non-juice drinkers). A test subject in a group with the higher hazard ratio has greater odds of reaching a specific endpoint first. In other words, the juice drinkers in the study had lower odds of developing Alzheimer Disease before those in the non-juice drinking group. A hazard ratio does not explain the extent of treatment benefit, so the dose of juice was not explained.

Furthermore, the Kame study only controlled for tobacco and alcohol use and a particular genotype found in Alzheimer Disease (ApoE). It did not control for significant predictors of dementia like family history or head trauma.

As an epidemiologist, one looks for certain key elements in research, such as a dose-response relationship and biologic plausibility. Mercola and the Kame study do not offer either of these core components of robust research.

Mercola’s claim that juice prevents Alzheimer Disease is not supported by the Kame study. The only possible claim is that there is evidence in one trial that drinking juice twice per week might forestall Alzheimer Disease in a specific population.

**Joseph Mercola, the Questionable Advocate for Juicing**

Perhaps Mercola is not the best advocate for juicing. Mercola was censured by the US Food and Drug Administration (FDA) in 2005 for making illegal claims about supplements. He then received a warning one year later, and the FDA warned him again in 2011. One would think that a single action from the FDA would lead one to back off, but Mercola’s supplement and book sales must be so lucrative that he is willing to look beyond censure.

Although his license remains active without sanctions, Mercola reputedly had a three-year battle with the Illinois Department of Financial and Professional Regulation, and he stopped practicing in 2012. In addition to his juice claims, Mercola opposes fluoridation, screening mammography, dental amalgams (fillings), and vitamin K administration to newborns. Although there are some debates about the appropriate ages and intervals for mammograms, these are not
Mercola’s allies are similarly problematic. His endorsements from a Dr. Andrew Saul are worrisome. Saul claims to have a “nontraditional PhD in ethology.” His other colleague, a Dr. Abram Hoffer, supported the use of niacin to treat schizophrenia. The research was later discredited because the diagnostic test to establish a diagnosis of schizophrenia was called into question.

Perhaps the juice industry would benefit from solid research rather than “expert” opinion from supplement profiteers like Joseph Mercola.

Is Juice Healthy?
Juice is not exactly a low-calorie, low-carbohydrate choice compared with soft drinks.

250 mL Serving Size

<table>
<thead>
<tr>
<th></th>
<th>Carbohydrates</th>
<th>kCal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple juice</td>
<td>28.97</td>
<td>110</td>
</tr>
<tr>
<td>Coca-Cola</td>
<td>35.18</td>
<td>105</td>
</tr>
<tr>
<td>Orange Juice</td>
<td>27.20</td>
<td>118</td>
</tr>
<tr>
<td>Pineapple Juice</td>
<td>32.18</td>
<td>140</td>
</tr>
</tbody>
</table>

One could argue that juice contains vitamins, which are not found in soft drinks. But a serving of apple juice, for example, contains only four percent of the recommended daily allowance (RDA) of vitamin C. It really is just sugar and water. It is true that other juices fair better in terms of vitamin C content, but vitamin C is found in a wide range of other foods contained in the typical Western diet.

Fresh-squeezed juice, however delicious, is also troublesome from a food safety standpoint. In fact, one of the first cases I was assigned as an epidemiology student was an outbreak of salmonella at a Florida resort. The CDC referred to outbreak location as “Theme Park A” (no prizes for guessing: it is in Orlando and has a mouse mascot.) The acid in juice was deemed to be protective, but the sweeter nature of fresh-squeezed orange juice meant that it was less acidic and thus less likely to contain salmonella. Outbreaks of *Escherichia coli* 0157:H7 and *cryptosporidia* have struck apple juice and apple cider. So much for “detoxification.”
Make no mistake, juice is delicious. I love fresh-squeezed juice from Tamara, I take the risk and buy unpasteurized orange juice—enjoying a small glass with my coffee in the morning. But it is not a detoxifying superfood. It is a nice dose of sugar when I wake up. But I am under no illusions. I could just as easily have Coca-Cola, it is not going to lead to weight loss, and it certainly is not going to detoxify anything.

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World Health Organization. Top Ten Causes of Death 

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10 out of 10: The Risks and Misuse of Patient Satisfaction Data

Matt Freeman DNP, MPH

“10 Out of 10”
When I purchased a car some years ago, I remember it as a favorable experience. The saleswoman was organized, cheerful, and I was given a generous discount. But the experience left a bitter taste in my mouth. As I left, she said, “You will receive a survey soon. Be sure to give me ’10 out of 10′ on everything or I will lose my job.”

It seemed a little hyperbolic. How could one survey wreck this woman’s livelihood?

A Vice President for the particular car manufacturer had gone to my school, and I decided to send him an email. He called me within the hour. “That’s not how this is supposed to work,” he said. “If we only got ’10 out of 10′ on everything, why would we bother asking?”

Aside from the expectation that all customers will give a perfect score, Likert scales are easily misinterpreted. One can picture “metrics” displayed in the break room of
This is miscalculation. One cannot take a mean or average score of Likert survey responses. Using means or averages makes an assumption of equidistance: the difference between a “7” and an “8” is assumed to be the same as the difference between an “8” and a “9.” There are statistical methods for analyzing Likert data, but these are often absent from social science research, so one would be unlikely to see robust statistical models at an auto dealership.

The greater question is, “What are you going to do with the information?” Let us imagine that the auto dealership was earning a “2” from most of its clientele. What can the sales personnel do to correct this? Be nicer? Offer candy? Flirt? The salespeople arguably have little control over the ratings that their customers submit. Perhaps there is a red flag if one salesperson uniformly gets lower scores than everyone else, but one would assume that there would be other indications of a problem, such as a poor sales record.

### The “10 out of 10” Expectation is Dangerous in Healthcare

“Every patient after every visit.” It is a line I have heard from multiple directors of primary care services. “Everyone gets a survey.” The goal seems to be to a mass of data collection.

It is hard to see how this information would not be skewed. At one HMO where I was a patient, I was asked to check survey boxes before I had even met with the clinician who was to take care of me. Only the most daring patient would write anything negative while his or her doctor, nurse, or other provider was sitting right there.

One can see how the advance survey might work in a healthcare provider’s interest. A patient might be about to receive bad news: “Here, give me a 10 out of 10, and then I will tell you about your poor prognosis, or how I want you to quit smoking, why you need to exercise more, or whatever else you might not want to hear.”

In clinics where I have worked, patients were given slips of paper with Likert scores
immediately after their visits. Although anonymous, the results were typically pointless: “20 people gave us ‘5 out of 5’ this week.” It provides a nice pat on the back, a reassurance to management that our patients appeared to be happy, and we could conveniently say, “We got the same great scores a year ago.”

Even those surveys that offered the option for narrative responses, these were not constructive. Patients might write, “Everything was fine,” or “I like nurse Beth.” Nice to know that Beth is appreciated, but there is nothing to do with this information.

Satisfaction and Wellness Can Be Inversely Related

In a study of 52,000 patients, researchers from the University of California Davis identified that patients with the highest satisfaction scores had a mortality risk 26 percent higher than less satisfied patients. The most satisfied patients were less likely to have emergency department visits, but were more likely to end up hospitalized, have greater healthcare costs, and be on more prescription medications.

There are multiple theories as to why the most satisfied patients are dying sooner. Researchers particularly identified prescription drug expenditures as an indication that patient expectation guides clinician behavior. A patient expects a certain medication, and is satisfied if the prescriber orders it without respect to cost, risk, or medical necessity.

The satisfied patient may also be hearing only what he or she wants to hear. In order to boost survey scores, providers may be ignoring more difficult conversations about adherence to medication regimes, lifestyle issues like weight or smoking, or similar concerns that could upset a patient.

One physician explained to me that he and his colleagues abbreviated their physical examinations because the momentary immodesty or embarrassment lowered their patient satisfaction numbers. It is rather like saying, “We stopped giving tetanus vaccines because patients might complain that their arms became sore.”

Pay for Performance

Two years ago, the Center for Medicare and Medicaid Services (CMS) began including patient satisfaction into hospital reimbursement. The stakes are high: about $1 billion in annual hospital payments is based upon responses to a 27-question patient satisfaction survey. The survey is not the only “pay for performance” measure used; hospitals and their staff are also evaluated on their adherence to standards of care, and other presumably measurable elements of
patient care. The patient satisfaction survey accounts for 30 percent of the “pay for performance” payments.

Hospitals have struggled because patient satisfaction is unpredictable. Furthermore, patients are not admitted to the hospital for a positive experience. “Do you think it is a great experience when I tell you that you have stage-four cancer and you may be dead in three months?” explained a chief nursing officer.

Another nurse executive recalled a patient who was fortunate to survive a stroke but complained that the meals in the hospital were too cold. Surviving a life-threatening illness and receiving high-quality care for a stroke still cost the hospital a pay cut because the food was not to the patient’s satisfaction.
The circumstances can be far more hazardous than just lukewarm hospital food. A nurse questioned a South Carolina emergency department physician when he ordered hydromorphone (Dilaudid) for a woman with a toothache. Hydromorphone is a powerful narcotic that is actually used in executions by lethal injection. The physician explained that his patient satisfaction scores had dropped in the past month, so he was making any effort to please patients, even if it was a bizarre choice of an unnecessary and potentially hazardous medication.

A family practice physician explained to me that he prescribes codeine cough syrup to every patient with a cough “because they enjoy it.” Although not as potent or as dangerous as hydromorphone, codeine carries many risks, and should only be prescribed if the patient needs it, not for a good time.
A Cheating Culture

A hospital executive explained to me that nursing staff were calling recently discharged patients to “coach” them on patient satisfaction surveys. Although the mechanism was unclear, there were rumors that the hospital staff found a method to ensure that the most problematic patients never receive the survey. When so much money is at stake, it is unsurprising that healthcare facilities would turn to dishonesty to manipulate survey results.

The manipulation of survey data is not unlike the scandal-fraught “pay for performance” efforts in public schools. Michelle Rhee introduced an elaborate pay for performance strategy when she became Chancellor of the District of Columbia Public Schools. Rhee had grand displays of $8,000 to $10,000 checks given to teachers and administrators when their students’ scores increased on standardized tests. Journalists from USA Today identified that teachers were “correcting” their students’ test responses. Once the District enacted a security policy that prevented tampering with test responses, the students’ test scores plummeted.
The DCPS scandal was one of many. In 2013, Beverly Hall, Superintendent of the Atlanta schools, was indicted in a similar test manipulation scheme. When the financial stakes are so high, student achievement and ethics are cast aside. Dr. Hall herself received $500,000 in performance bonuses. She was described as a leader who, “allowed cheating—at all levels—to go unchecked for years.”

“Satisfaction” in the Healthcare Context

Aside from food served at the right temperature, how can healthcare providers and facilities ensure high satisfaction ratings and thus higher pay?

The first problem is that patients are usually sick! No relationship is going to feel particularly great if it is in the setting of an illness, needles, surgeries, tests, anxiety, and so forth. Furthermore, people who struggle with psychiatric disorders that affect interpersonal relationships are over-represented in primary care clinics. Studies have estimated an 18 to 26 percent prevalence of borderline personality disorder at a primary care clinics. That seems like an overstatement, but one could safely argue that a variety of psychiatric conditions are over-represented in those seeking primary health care.

If one is looking for favorable patient satisfaction survey results, looking to those who do not feel well or those with personality disorders would not be good choices.
In some instances, satisfaction survey tools and expectations are not designed by anyone with a healthcare background. In one practice where I worked, there was a “zero tolerance” policy for patient complaints. This is absurd. If one is ill, perspectives can be blurred: anxiety and depression can be exacerbated, patients and their families may seek to blame someone for an illness. Above all, the costs of healthcare can trigger complaints. I covered my own employees by “accidentally” failing to mention complaints. These were almost never substantive, and I often did not even bother telling the physician, psychologist, or nurse that anyone had bothered to complain. There was nothing to gain from the complaint other than anxiety and self-doubt.

I supervised one physician who was often the subject of complaints. Patients felt that he was not warm or engaging enough. He had a cerebral, introverted, and thoughtful approach. His medical judgment was sound, and he had a fantastic sense of humor. He had top-ranked credentials, and offered meaningful insight when we worked together as a team. What was I going to do with the complaints? Turn to him and say, “Change your personality. Watch this video about how to be more ebullient or I will cut your pay.” I never said a word to him.

Anyone who has worked as a healthcare provider or in healthcare management recognizes that “10 out of 10” from every patient is an unreasonable expectation.

“It Was a Pleasure to Participate in Your Care Today”
My Israeli colleagues were teary-eyed with laughter when they watched American instructional videos about how to improve their relationships with patients. The
videos seemed to imply that one had endless time during visits, and that “canned” statements replaced authenticity. They were must amused by running consent narrative that was deemed to be satisfaction enhancing. “I would now going to look into you ear, is that okay with you Mrs. Johnson?” It is hard to imagine that Mrs. Johnson really cared that much; she probably just wanted her earache to go away.

A friend at a large university medical center is required to conclude every visit with, “It was a pleasure participating in your care today.”

Instructional videos, workshops, and guides designed to elicit higher patient satisfaction omit variation among clinicians as well as a critical force in the provider/patient relationship: authenticity. It seems self-explanatory that patients would rather converse with a real person rather than someone using pre-programmed speech and phrases.

Asking permission to look in someone’s ear or the odd expression of “pleasure” in participating in a patient’s care overlook the more critical role in better patient care: shared goals. One would assume that the most satisfied patients have their needs met. A patient may need to just talk, may just need pain control, or may need reassurance that his or her symptoms will improve with time. A savvy clinician seeks to establish to make shared goals and expectations.

I have worked with adolescents and young adults for 15 years, and I have seen thousands of patients for pre-participation examinations for athletics. My usual line is, “Are you the kind of patient who would like a ‘play by play’ explanation of what I’m doing, or have you done this a lot before, and would you prefer me to just ‘get it over with?” Patients almost invariably choose the latter. In other words, the patient’s goal is to just get out of there with their paperwork signed. That scenario is never presented in patient satisfaction training modules.

**Weighing Medical Judgment, Ethics, and Scores**

Sometimes the signature is not an option. Saying “no” is a part of medicine. What if the teenager or young adult does not meet the medical requirements for the particular sport? You can forget customer satisfaction. The patient (and probably his or her parents) just wanted a signature regardless of the sound reasons to be concerned about the patient’s health. Even if the answer is a request for prior records, a chance to talk with another healthcare provider, or an additional test, the visit is catastrophic from a satisfaction standpoint. Cheerleading practice starts this afternoon, and the doctor just told the cheerleader that she has to wait until the x-ray results are back because her wrist appears broken. There will not be a “10 out of 10” for the doctor that day, and he or she may face a pay cut because of it.

In a similar example, patients with sleep apnea are required to undergo a
commercial driving license examination every year instead of every two years. If a healthcare provider wanted higher satisfaction scores, he or she would be wise to ignore the Federal Motor Carrier Safety Administration guidance and issue a two-year license. But this action puts patient expectation and satisfaction a priority over the safety of the patient and the public.

Like a teacher in Washington or Atlanta shortchanging students’ educations in exchange for financial incentives, a doctor can easily be lured by the threat of a poor survey response. Maybe he or she will “accidentally” overlook a broken wrist or sleep apnea, or just not examine the patient’s wrists or ask about sleep apnea. Then everyone can be happy about the outcome of the visit. Attention to medical ethics and the long-term consequences to individual and public health do not provide cash incentives.

Patients may ask for medications that may harm them, tests they do not need, approval to continue health-compromising behavior, unlimited access to their providers, and other unrealistic expectations. Of course one should say “no” with a combination of professionalism and problem solving. But the answer is still “no,” regardless of how gently and sensitively the message is conveyed.

**Online Reviews**

Satisfaction surveys impact reimbursement directly. Online reviews can prevent patients from coming in the first place, equally affecting a clinician’s income livelihood.

Yelp.com is the leader in online reviews. As with all of its reviews, Yelp does not verify if a patient was even a patient at all. Anyone can write a review any time. Restaurant owners bemoan Yelp reviews in which customers complain about the salmon but the restaurant does not even serve salmon. The same applies in healthcare: a Yelp reviewer does not even have to have met the doctor better yet visited as a patient.

In my case, Yelp was an invaluable resource. Without any money paid to Yelp, I ended up getting ranked “#1 Best Doctor” in my city. Patients flooded in. But it was not really fair. I was happy to have the business, but the Yelp reviews had nothing to do with my clinical acumen, education, or other abilities. In fact, subsequent practices consulted my Yelp reviews when they made the decisions to hire me.
Some cases were baffling: one woman wrote about a negative experience with me but continued to see me as a patient. Although I did everything possible to remain objective, I desperately wanted to say, “You defamed me in a permanent, public fashion, and now you want me to treat you?” I quietly ignored the review since Yelp is theoretically anonymous. This also exemplifies the over-representation of borderline personality traits or borderline personality disorder in primary care (borderline patients tend to follow the pattern of, “I hate you; don’t leave me.”)

Yelp could have easily broken my practice, income, and future employment. A handful of negative reviews, and five stars drop to four. Yelp and other online review sites have proliferated, so one can only hope that favorable reviews outnumber the duds.

**Empowerment versus Manipulation**

Patients who are aware of the financial implications of an unfavorable survey or Yelp review can influence the objectivity of their care, even if it is to their own detriment.

A friend told me of a patient who threatened his primary care provider with a negative online review. Consequently the practice overlooked the patient’s unpaid bills and withheld addressing his poor adherence to medications and markedly unhealthy lifestyle. He was to receive large discounts and only good news about his health.

Another former colleague faced a woman who snapped, “I’m going on line and telling everyone about you” because she did not receive the antibiotic she thought she deserved.

In the expanding dictionary of medical slang, the most frightening patients are referred to as “bcc.” This refers to the email selection of “blind carbon copy,” a
patient who says nothing to his or her treating provider but submits a negative
survey response or derogatory online review.

A friend outside of the medical profession asked me if I ever felt badgered in to
ordering an inappropriate test or prescribing the wrong medication due to fears of a
negative survey or review. “Absolutely!” I replied. He was shocked. “The customer
is always right, even when the customer is a patient and you are trying to keep him
healthy.”

Patient satisfaction is not to be confused with patient empowerment. The
empowered patient is an active participant in his or her care, knowledgeable about
his or her health status, assertive, asking questions, and willing to request a second
opinion. This is reasonable and helpful.

My least favorite patients say, “Whatever you say.” I would much rather have a
patient who is willing to say, “I was reading about this before I came in.” That way,
I know what might be worrying the patient, what tests or medications the patient
expects, and might shed light on a diagnosis or treatment that I had not considered.

The empowered patient is not threatening or manipulative like a “bcc.” He or she is
honest and informed, and expectations are articulated. Above all, an empowered
patient feels safe asserting his or knowledge, needs, concerns, or even misgivings.
An empowered patient is not necessarily going to balk if a doctor contradicts what
the patient anticipates.

The manipulative patient may or may not voice his or her expectations,
unreasonable expectations, a personality disorder, or any other confluence of
factors that can lead to dissatisfaction. This dissatisfaction can result in a form of
“acting out:” the patient can argue that he or she has leverage in the form of
surveys and reviews.

Moving Forward
Reviews and surveys have become embedded in American culture, and they are
unlikely to go anywhere. But there are a few steps that could help make better use of
the data collected:

- Satisfaction scores should never be tied to compensation. This leaves far too
  much room for cheating, and it can produce a culture in which patients are given
  inappropriate or even dangerous medications, tests, procedures, and advice.
- “Every patient, every time” collects an extraordinary amount of data, but it is
  unclear about how this can be used to improve patient experience. As with any
  survey tool, the first question to ask is, “How are we going to act on the results
“10 out of 10” from every patient is unreasonable, and is incompatible with safe, effective healthcare. As the auto manufacturer vice president put it, “What is the point of asking if you get a perfect 10 every time?”

Any use of Likert scores should employ sound statistical models.

Canned phrases like, “It was a pleasure participating in your care” can be demeaning to patients. These really just indicate that the healthcare provider went through a training course, and that he or she is likely subject to evaluation. Authentic, genuine, honest, and respectful communication should be the expectation.

Healthcare providers and their employers have to remember that Yelp and similar online review sites are not a reliable measure of provider performance. In fact, healthcare facilities and providers should take the lead by educating the public on how online reviews maybe skewed. I write this knowing that Yelp was invaluable to me as I built a practice.

Except in emergencies, patients overwhelmingly have a choice in providers and facilities. If a patient is dissatisfied, he or she would be wise to just seek care elsewhere. Just as if one did not like the steak served at a restaurant, it seems wiser to go somewhere else next time rather than berate the chef in a satisfaction survey.

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The airline ticket from New York to Washington was $700. It was a trip from Midtown New York to a location near the Capitol in Washington.

The sensible options would have been a train or the one of the hourly shuttles from La Guardia to National.

“Sylvia,” an executive at a struggling nonprofit, insisted that she travel only on United Airlines, and she expected to fly in first class for the 40-minute flight. United does not fly “The Shuttle” between La Guardia and National Airports, and first class was not an option then. So she arranged for a ticket from Newark Airport to Dulles Airport, with limousines on both ends of the trip. This added almost 70 miles of extra time on the road between the airports and the city center, not to mention the airfare difference and cost of the limousines.

This was the final act of pathological frequent flying that led to Sylvia’s dismissal from her employer. For roughly a year, she had been flying once or twice a month from New York to San Francisco. The nonprofit had no office in San Francisco, but she would arrange to have meetings there. She never expressed any particular passion for San Francisco, no significant other who lived there, but she relished in the 2,500 frequent flyer miles she would accrue for each flight.

Although her social life was limited, she would invite friends or associates to lunch. Sylvia would insist on using her own credit card and obtaining cash reimbursement.
from her friends. The reason was to gain more miles with her credit card. She frequently bragged that she used her credit card at Starbucks every morning. A $4 “Grande” latte every morning could yield 1,460 miles... enough miles to go nowhere. It would require one latte per day for more than eight and a half years to redeem a restricted, one-way, economy class ticket within the 48 contiguous United States. But this was immaterial to Sylvia.
In fact, Sylvia had no grand plans for her miles. She was not a jetsetter, enjoying five-star hotels or luxurious first class flight rewards. Her interest was merely in accumulating the miles, and bragging about her “elite” status with United Airlines. Without a partner, close family, children, or other passions in life, the miles became a surrogate for her self worth. Her airline “status” was perhaps a substitute for a contribution to her community, science, education, the humanities, the welfare of others, or even a sense of self.

Sylvia’s behavior was pathologic. Her behavior met the definitions of psychopathology: unexpectedness, statistical infrequency, violation of social norms, impact on personal relationships and work, and significant personal distress.

This was not a woman who was enjoying an art of a good deal, a special perquisite for loyalty to an airline, the freedom of travel, or an interest in airplanes. Her attachment was to the miles themselves and nothing more.

Until her Newark-Dulles first class escapade, Sylvia figuratively “flew under the radar.” The American middle class knows all about frequent flyer miles. It is perhaps unusual to see someone without an airline-branded credit card or no frequent flyer account. It is not a violation of a social norm to want miles for a free ticket or an upgrade to first class. But a subset of the flying population, Sylvia included, is what one might consider to be a “pathological flyer.”

Many people in the world are fascinated by travel, planes, and flying. It is a part of their lives and personalities. These enthusiasts are experiencing flying as an ego-syntonic phenomenon: they are comfortable with themselves and their lives, and frequent flying is part of who they are. Sylvia’s desperation and obsession was likely to be disharmonious with her personality and values and thus ego-dystonic. She was suffering from her need for miles and status.

I am no stranger to this myself. I grew up loving airplanes. I have old airplane photos in my office. I enjoy travelling to visit my family and see the world. I enjoy looking out the window, watching shiny jets at the airport, and I do try to snag a good deal if I can fly in first class rather than the back of the plane. At family gatherings, we often find ourselves musing over the best options for flying from one place to another, which airline might offer better service, and what research we have accomplished online to figure this out. It is perhaps just our lifestyle living on four continents.

**Airline “Status” as a Sense of Self**

Subsequent to Sylvia, I became particularly fascinated when I observed a 50-
something woman enter a loud, distressed, and histrionic tantrum at an airport ticket counter. The agent had forgotten to affix orange “priority” tags on her checked baggage. I speak from experience that such tags are usually meaningless, but they were a “tipping point” for this woman. She made an explosive tirade in front of the crowded terminal, making a point of her high-ranking status with the airline’s frequent flyer program.

The treasured but meaningless orange tag

This woman frightened me. Her behavior was entirely dysregulated, she was impulsive, distraught, tearful, and inconsolable.

After she was escorted to an airline club, I spoke with an agent about her. “She’s lonely. We are like her family, so she expects us to be something more than an airline to her.” In a prior instance, she was incensed that the airline had no cake acknowledging her birthday.

The agent was insightful. “There are a lot of them,” she remarked. “It’s sad.” It turned out that this woman was going to Shanghai for a day... just to earn frequent flyer miles. As far as the airline knew, she had no business, friends, or interest in Shanghai.

When I returned from my trip, I presented her case in our weekly psychology case
rounds. Although not our patient, I was equally fearful and fascinated by her behavior. The room rose with chatter. All of my colleagues had witnessed “pathological flyers.”

One of the psychologists on my staff compared it to gambling addiction. “She placed all of her chits into the frequent flyer game, and she did not get the payout she was expecting.”

I likened it more to histrionic narcissism. Narcissists cannot tolerate the smallest of slights, so failure to apply a meaningless orange baggage tag came across as an attack on her sense of her value as a person.

**The Public and Private Worlds of the Pathological Flyer**

In *The Presentation of Self*, Sociologist Erving Goffman defines human interactions in terms of a stage: front, back, and off stage. When living life on the “front stage,” people are aware that they are watched, in public, and they conform to social norms. But the anonymity of air travel erodes the front stage. Flyers—frequent and periodic—may lose this emotional regulation and go “off stage.” Like the problematic gambler who is otherwise living within social norms, pathological gamblers and flyers are easily disquieted when their expectations for winning are unmet.

Of course airports and airplanes in which people step “off stage,” to use Goffman’s analogy. The fatigue, stress of flying, and status-seeking certainly takes place at hotel reception desks, and most everyone can recall a histrionic display of entitlement involving the host or hostess of a restaurant. But the complexity and tension of flying lend themselves to maladaptive and disruptive behavior.

**Exclusivity**

There was a common theme among discussions of frequent flyer behavior: *special treatment*. Flyers’ war stories almost inevitably included the story of how a ticket or gate agent broke a rule, held a flight behind, or offered some sort of other perceived act of heroism because the traveler was of adequate frequent flyer elite status to warrant treatment better than “regular” passengers.

There is a sad reality to this “status” based world. The Association of Flight Attendants (AFA), the union that represents the Continental Airlines subsidiary of United Continental Holdings, explained that passengers with the highest level of frequent flyer status had an extraordinary power: a complaint from one of these passengers could result in immediate termination. Although the union and the
airline are still debating this policy, it is a powerful reinforcement of the “status-holder” psyche: “I am a high level frequent flyer, and if you do not give me what I want, you can lose your job.” The missing orange luggage tags could have cost someone his or her job. Ironically, United’s erstwhile slogan was, “You’re the boss.”

In the pathologic flyer’s mindset, rewards are based on status not kindness, altruism, or reciprocity. The system limits “self” to a tier in a frequent flyer program. In the simplest form of behaviorism, the only incentives are to have more miles and more status. Conscience, ethics, and the superego are irrelevant. An airline agent’s willingness to reroute a passenger, upgrade someone to first class, or provide a hotel room in the event of a mishap is not based on the passenger’s need or altruism. It is a caste-based economy.

The caste divisions are dynamic. Airlines change their requirements for various levels of “status,” thereby adding to an anxiety over losing one’s perceived social capital in world of air travel.

This is a climate largely limited to flying. I receive a warm greeting from the cashier at the supermarket on my block, the staff at the post office are pleasant, the barista on my corner knows who I am, and says hello. If I were to be short on change one day, he would likely help out. The woman at the supermarket on my block in Tel Aviv went to the back to get me a fresher loaf of bread from the bakery yesterday. None of this was based on my “status.” It was a matter of being a customer in their establishment. And I am (usually) calm, smiling, and say hello to each of these people. There is no status system to dictate how I am treated. Whether I was going to spend 100 shekels or 900 shekels, the woman at the supermarket was going to make sure that I got the better loaf of bread.
Furthermore, a tantrum over luggage tags would be met with rolled eyes rather than a fear of losing one’s job. Outside of the world of flying, there are plenty of histrionic “Do You Know Who I Am?” explosions, and they are usually met with clenched teeth by bystanders rather than frantic attempts to prevent the customer from filing a complaint.

Moving Forward: Taking the High Road
One of the cornerstones of behavioral therapy is to allow the patient to share his or her decision-making. In the case of an impulse control disorder, like hoarding of compulsive shopping, the therapist asks the client to “talk through” his or her own decision-making. “Tell me why earning these miles is important to you. What are your plans for them? What do they mean to you?” “How is this affecting your life?”

This pathway to insight can be accompanied by the reality that airlines are not the same as families and relationships. Airlines exist to produce revenue for their owners and shareholders. Indeed there are millions of kind airline employees across the world, and they do want passengers to be happy with the service they provide, but this is a job, an effort to make money, and not the same as social and family relationships.

But the pathological flyer is unlikely to seek care. Unless noted by a concerned friend or family member, or if the flying leads to sad consequences like Sylvia’s loss of a job, it is not likely to present itself to a therapist or primary care provider.

The airlines are tacitly complicit in the perpetuation of this pathology. A pathologic flyer, however nettlesome to employees and other passengers, can generate tremendous revenue. Unlike a slot machine, an airline cannot place a sticker warning of the risk of “problem flying” or a toll-free hotline to call for help.

If anything, this is a call for further research. The public and healthcare providers should be cognizant of the pain of the pathological flyer, and be prepared to intercede.

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Rampage Shootings by Adolescents and Young Adults: The Problems with Risk Assessment and Implications for Primary Care

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Introduction

Rampage shootings are rare but devastating events. In the aftermath of each attack, common questions are: “Could this have been prevented? Were there warning signs?” This review of literature was conducted through searches of PubMed, CINAHL, EBSCO, Google Scholar, as well as lay press articles about multiple rampage events. This article seeks to summarize research and address the medico-legal aspects of risk assessment for rampage violence in adolescents and young adults.

A “rampage killing” is defined as:

- A homicidal attack on multiple people
- The shooter(s) may start with a specific target, but go on to shoot others, and may be unaware of those who have been shot.
- The attack strikes an entire institution (school, building, or community)
  (Newman, 2004)

In addition to the definition by Newman above, a rampage killing may be a homicidal attack or a suicide/homicide. Although a perpetrator of such an attack can be of any age, this article focuses on adolescent and young adult offenders, and it is specific to an attack with a firearm rather than an explosive incendiary device (IED), arson, or other means. In addition, this form of violence differs from terrorism, which may be sponsored by an external force or serves as an instrument to achieve a specific goal

Watches and Warnings

Prediction of future violence is analogous to prediction of violent weather. Tornadoes strike the United States more than any other place on earth, with about 1,000 tornadoes recorded annually (National Centers for Environmental
In order to mitigate the risk to life and property, the National Weather Service Storm Prediction Center issues a tornado *watch*, indicating a confluence of conditions favorable for tornado formation (Edwards, 2015).

In the event that an actual tornado is identified by a trained “spotter” or a signature tornado echo is identified on radar, the local National Weather Service office issues a tornado *warning*, advising those in the storm’s path that there is a specific and imminent threat, and that they should seek shelter (Edwards, 2015).

Tornado prediction is an inexact science. The Storm Prediction Center employs a combination of computer models, real-time data, and forecaster experience. The Storm Prediction Center concedes that there are “not checkboxes” nor a “single threshold” that guides its decision-making process (Edwards, 2015).

The multiple variables and complexity of tornado prediction result in poor specificity. In fact, an actual tornado warning is only issued in 20 percent of tornado watches (Prentice, 2014). Even if a tornado occurs, it will most likely affect a small geographic portion of the tornado watch area. This can lead to false alarms, and public confusion about the difference between a watch and a warning (Samenow, 2011). In fact, the U.S. Weather Bureau (predecessor to the National Weather Service) was banned from using the term “tornado” until 1950, fearing public panic (Edwards, 2015).

Weather forecasters have a communication challenge: the public needs to be have confidence with forecasting tools, understand their limitations, while avoiding overstatement and panic.
Prediction of a school shooting is similarly complex and problematic. A multitude of variables can conceivably predict an act of violence by an adolescent or young adult, but prediction tools are inconsistent. Like the genesis of a tornado, there is no distinctive profile of a youth who will carry out school violence. Primary care providers have the responsibility to understand and communicate the current clinical evidence and limitations of risk assessment tools. Likewise, primary care providers need to be conscious of their duty to warn potential victims should a watch become a warning.

**Why is Risk Assessment for Violence of Significance to Primary Care Providers?**

Rampage shootings, particularly school shootings, are an issue of national concern. Students, families, and communities have a shared fear of an attack. Primary care providers may be asked to field questions and coordinate care for adolescents and young adults who are feared to be violent. In other cases, families and communities may call upon primary care providers for advice and information about violence as a public health concern.

Clinicians working in school-based and school-linked health centers and college health environments may be asked to participate in behavioral intervention teams (BIT teams,) and should therefore be familiar with the complexities, legal implications, and processes pertaining to risk assessment.

In the aftermath of an attack, primary care providers may be called upon to field questions about the epidemiology and pathology of violent behavior as families and communities confront a tragedy.

Primary care providers may be the only point of contact into the medical and behavioral health systems. In the case of suicide, 90 percent of parents were unaware of an imminent suicidal risk in their child. Families may be unfamiliar with the signs of mental illness, or may in be denial that their son or daughter is exhibiting signs of problematic behavior. The courts have consistently upheld that a school or anyone else has the responsibility to intervene if a minor exhibits signs of violence (Heller, 2014).
Dylan Storm Roof, who murdered nine and wounded one at the Emanuel African Methodist Church in Charleston, South Carolina. (Photo: filosofiaclimatica.blogspot.com)

The Problems with Risk Assessment

Suicide-homicide attacks are rare; affecting 0.2 to 0.38 per 100,000 people (Knoll, 2012). Rampage attacks are even rarer, since most homicides take place amid an interpersonal conflict between just two people (Dowd & Sege, 2012). In one study, 72 percent of murder-suicides occurred between two intimate partners (Violence Policy Center, 2011). Although there are certain states that report violent deaths voluntarily, there is no national database of mass or rampage killings (Burgess, Sekula, & Carretta, 2015). This article includes analysis of both homicide-suicide rampage attacks (such as Columbine High School) and homicide attacks (such as the Century Theater in Aurora, Colorado.)

Over- and under-estimation of risk can be detrimental in many circumstances, but has the potential for profound medico-legal implications in the prediction of violence. An under-estimation can result in potentially preventable morbidity and mortality; an over-estimation can result in needless evaluation, treatment, or scrutiny (Blumenthal, Huckle, Czornyj, Craissati, & Richardson, 2010). The results of an assessment suggestive than an individual could become violent may be rehabilitative and lead to treatment and follow-up but misinterpreted results have the capacity to be unduly punitive (Borum, 2000).
T.J. Lane, who murdered three and wounded three at Chardon High School, Chardon, Ohio (Photo: Facebook)

Like tornado prediction, risk assessment may include actuarial methods, such as validated inventories, as well as a clinician’s own experience and assessment.

Actuarial Prediction Methods

Actuarial prediction of risk includes inventories based on population data. Commonly used inventories include the Violence Risk Appraisal Guide (VRAG) and the Historical, Clinical, Risk Management Inventory (HCR-20). These structured inventories are based on population data, and do not integrate a patient’s affect, clinical presentation, or “dynamic” factors such as particular school or family circumstances. (Blumenthal et al., 2010).

A clinician’s individual assessment and judgment does not necessarily invalidate an actuarial assessment tool. For example, an HCR-20 score may identify a patient as potentially low risk for violence. But if the clinician learns that the patient is not taking medication as prescribed, carrying a weapon and making threats, these “dynamic” factors are absent in actuarial assessment (Buchanan, 2013). In fact, there is significantly poor consistency between clinical assessment and actuarial inventories (Côté, Crocker, Nicholls, & Seto, 2012).
Actuarial models have been misinterpreted in multiple studies. In fact, one review identified that statistical models were misinterpreted in 90 percent of studies that employed actuarial risk assessment for violence (Singh, Desmarais, & Van Dorn, 2013).

Researchers often analyzed the Area Under the Curve (AUC) while evaluating the utility of a risk assessment inventory or tool. This statistical tool is a component of “Receiver Operator Characteristic” (ROC) analysis. An ROC curve takes certain discrete “cutoff” values and then pairs these with a known variable. For example, an ROC curve might plot patients with sputum culture confirmed pulmonary tuberculosis versus a radiologist’s analysis of a “small,” “moderate,” or “large” likelihood that the patient has tuberculosis. A larger area under the curve suggests that the radiologist is rating patients with known tuberculosis as having a “high” likelihood of having the disease (Hanley & McNeil, 1982).

The AUC has been misinterpreted as a proportion of individuals who did or did not commit violence or a predictor of violence. One of the greatest problems is that ROC models do not have standard benchmarks. Many were described as having “small,” “moderate,” or “large” magnitude without an agreed standard of what these designations mean (Singh, 2013). An AUC analysis provides only relative ranking for the scale used in the study. Area Under the Curve analysis does not differentiate between the levels of sensitivity and specificity at a specific cutoff point (Campbell, 2004).

In one study of violence assessment, a study predicted recidivism among sex offenders using an AUC analysis. Upon further statistical analysis, 45 percent of 209 classifications of “violence” were mistaken, yielding 94 false positives, and therefore 94 people who were inappropriately detained. Furthermore, the analysis was so insensitive that it missed 40 percent of offenders who were released and repeated violent acts (Campbell, 2004).

Most studies also had comparatively small sample sizes (less than 200), which can lead to inaccurate interpretation of ROC analysis (the methodology for establishing the area under the curve.) Lastly, most risk analysis measures did not include temporality, so a violent offender’s risk assessment was not correlated in a time-to-event analysis (Singh et al., 2013).

Should we abandon the use of actuarial analysis? Actuarial risk assessment tools can still be a part of an overall assessment, but must be interpreted with caution. Some researchers suggested that inventories such as the Structured Assessment of Violence in Youth (SAVRY) may be helpful for other purposes. A higher risk score may not necessarily be predictive of violence toward others, but may positively identify related behavioral problems, such as school truancy and drop outs (McGowan, Horn, & Mellott, 2011).
Moreover, it is the action that one takes as a result of the assessment, not the method of assessment that is of greater importance. If an assessment by any method leads to the accurate prevention of morbidity and mortality without overestimation of risk, then the assessment has been a worthwhile tool. (Carroll, 2007).

**Characteristics of School Violence Perpetrators**

School violence has been viewed as a maladaptive mechanism to confront stressful circumstances, such as early exposure to violence. This is consistent with a similar thought process in adolescents who run away, drop out of school, commit crimes, or attempt suicide. This has been described as a “precocious role exit:” an adolescent under stress “exits” his or her growth as a teenager prematurely, resulting in behavior that is dangerous to himself, herself, or others (Haynie, Petts, Maimon, & Piquero, 2009).

Some studies of violence describe it as a dichotomous variable: the degree of violence and its deadlines are not taken into account. In these studies the strongest predictors were direct exposure to intimate partner violence and indirect exposure to the suicide of a friend or family member (Haynie et al., 2009).

Rampage killers differ from other perpetrators of violent crime. Rampage attacks are—fortunately—statistical rarities, and therefore difficult to study. Furthermore, many attacks are suicide–homicide attacks, so critical information about the killer’s psychological and medical status is often unknown. In a study of multiple rampage killings, the perpetrators were not deemed to be impulsive, did not have known mood or thought disorders, and planned their attacks carefully—often for months (Mullen, 2004).
In the case of adolescents and young adults, the role of impulsivity is difficult to establish. Although adolescents may have impulsive traits, “sensation seeking” and development of impulse control can be components of healthy adolescent development (Romer, 2010).

Although the study population of school shooters is too small to make significant generalizations, researchers have suggested the role of “honor” in rampage attacks. This refers to a protection of social status; in other words, an adolescent or young adult who feels that his social status (honor) has been threatened, he or she may respond with a violent counter-attack. The culture of honor is inconsistently related to climate, rurality, and socio-economic status (Brown, Osterman, & Barnes, 2009).

In studies of adolescents who carried firearms to school, the most commonly cited reason was for a sense of protection and respect. About one-fifth of firearm-carrying adolescents stated that it was permissible to shoot someone if he or she demonstrated disrespect (de Apodaca, Brighton, Perkins, Jackson, & Steege, 2012).

A long list of risk factors may contribute to violence in adolescent and young adult patients. There is a dearth of clinical evidence to support these risk factors.

**History of Violence**

Although a history of violence appears to be the most convincing predictor of future violence, most perpetrators of school-shootings are first time offenders (Dill, Redding, Smith, Surette, & Cornell, 2011).

The history of violence risk factor also affects the utility of deterrence measures. From a developmental perspective, adolescents may not have the maturity to comprehend the legal consequences of violence. Adolescents are typically focused on short-term benefits, not long-term consequences. (Dill et al., 2011).

For those adolescents with a history of illegal—but not necessarily violent—behavior, there is no evidence to suggest that “boot camps” or “shock incarceration” like “scared straight” deter adolescents from violence (Dill et al., 2011).

**Major Mental Illness**
There is an inconsistent relationship between violence and diagnosed major mental disorders. This inconsistency has been suggested to be a function of variance of research methods, as well as confounders such as substance abuse and personality disorders (Douglas, Guy, & Hart, 2009).

**Thought Disorders**

Threat/Control-Override (TCO) delusions are correlated with violent behavior in those patients with an *existing diagnosis of a mental disorder*. “Control override” refers to thought disorders in which a patient is under the delusion that he or she is no longer under the control of his or her own thoughts. This may be characterized as:

1. A belief that some force is placing thoughts directly into one’s mind
2. A belief that someone could “steal” one’s thoughts
3. A control of thoughts through television or radio or forces imparted by hypnosis, magic, x-rays, or lasers

   (Teasdale, Silver, & Monahan, 2006).

The power of a TCO delusion makes some conceptual sense. If one receives uncontrollable messages from an outside force, it seems that these could lead to a compulsion to commit an act of violence. Although the study population is small, none of the recent rampage shootings have included a discussion of thought disorders in the perpetrator’s psychiatric history. These include James Holmes in Aurora, Colorado in which there was only a passing possibility of psychopathy noted in his medical chart (O’Neill & Weisfeldt, 2015); Dylan Klebold and Eric Harris in Littleton, Colorado (Cullen, 2009); Adam Lanza in Newton, Connecticut (Ferguson, 2013); and the presence of a thought disorder was disputed in the case of T.J. Lane in Chardon, Ohio (Caniglia, 2013).

Threat/Control Override Delusions have been cited in individual cases of violence, but have not been demonstrated to be a consistent, reliable risk factor based on one-year follow-up of patients discharged after a psychiatric admission (Appelbaum, Robbins, & Monahan, 2000).

In the case of Cho Seung-Hui, who killed 33 people, including himself, at Virginia Tech, a thought disorder was *considered* but later dismissed. In a court evaluation prior to the shooting, Cho was described as having a “flat affect and depressed mood,” but “his insight and judgment are normal (CNN, 2007).”
Personality Disorders

In the adult population, personality disorders are a weak predictor of the frequency of violent behavior as well as recidivism. Since personality disorders persist over time, the relationship between a personality disorder is difficult to confirm due to a lack of temporal relationship (Logan & Johnstone, 2010).

Psychopathy (Antisocial Personality Disorder)

Antisocial personality disorder (psychopathy or sociopathy) is not necessarily defined by violent behavior. The disorder does correlate with violence, substance abuse, and low intelligence in both adolescent and adult samples. But psychopathy is often undiagnosed, and the so-called “successful psychopath” is afflicted by the disorder but never faces criminal convictions. In the case of adolescents, the official diagnosis of antisocial personality disorder requires that the patient be at least 18 years or older (American Psychiatric Association. & American Psychiatric Association. DSM-5 Task Force., 2013), so there may be a form of artifact in underreporting due to the age criteria for diagnosis.

Dissocial Personality Traits

“Dissocial” or “antisocial” traits refer to personality elements that may be a component of antisocial personality disorder, or these traits may exist on their own.

Dissocial traits have the strongest conceptual relationship between personality
disorders and violence is the “dissocial” dimension of some disorders. The dissocial component of a personality disorder includes detachment, flattened affect, and decreased empathy. It is theorized that this dissociation is a defense mechanism against criticism. (Logan & Johnstone, 2010). As with “honor killings” discussed above, dissocial behavior serves to protect self image while still perpetrating violence.

The dissocial dimension of a personality disorder can also include paranoia. An individual with dissocial traits may someone vulnerable to narcissistic injury (such as a threat to one’s honor), and this can lead to paranoia. This particular form of paranoia is characterized by five functions:

1. Putting oneself before others
2. Insensitivity
3. Suspiciousness and unwarranted grievances
4. Ambiguous interactions can be misinterpreted as criticisms
   1. Violence can serve as a means to restore self-esteem
      (Logan & Johnstone, 2010)

Dissocial behavior can be aggravated by a concurrent major depressive disorder. It is unclear if dissocial behavior is a reaction to depression, a component of depression, or a result of depression (Logan & Johnstone, 2010).

In the realm of developmental psychology, dissociative behavior can be viewed as a function of identity disturbance comprising a labile affect, cognitive dysregulation, and unpredictable behavior (Logan & Johnstone, 2010).

**Borderline Personality Disorder**

Borderline personality disorder is not well-correlated with violence unless the borderline patient is suffering from a severe form of the disorder with a comorbidities (Logan & Johnstone, 2010).

**Socially Inhibited Personalities**

There is some evidence relating social inhibition with violent behavior. An avoidant individual may have shallow friendships, relationships, and sexual contacts, a lack of intimacy, low self-esteem, and may seek to hide his or her avoidant behavior. Social inhibition correlates with major depressive disorder and dysthymia as well as substance abuse. The combination of these personality functions, major mental illness, and substance abuse may correlate with a proclivity toward violent behavior
Compulsive Personality Traits

Compulsivity can lead to self-doubt, guilt, and exaggerated sense of responsibility. When compulsivity is misunderstood or maladaptive, it can lead to anger and resentment. Compulsive patients may turn to substance abuse or violent behavior as coping mechanisms: means to confront a lack of one’s control over the environment or the behavior of others (Logan & Johnstone, 2010).

Three recent rampage killings by young adults included the possibility of diagnosis of obsessive compulsive disorder (OCD): James Eagan Holmes in Aurora, Colorado, Adam Lanza in Sandy Hook, Connecticut; and Eric Harris at Columbine High School. Lynne Fenton MD, the psychiatrist who managed James Eagan Holmes at the University of Colorado, felt that Holmes’ preoccupation with rampage killing was consistent with OCD (O’Neill & Weisfeldt, 2015). Adam Lanza had been diagnosed with compulsive behavior at the Yale Child Study Center, but his mother declined treatment for him, particularly medication (Schwarz & Ramilo, 2014). Eric Harris, who committed a murder-suicide at Columbine High School, was prescribed Luvox (fluvoxamine), presumably for OCD. Reports stated that it is unknown if Harris was taking the medication, or if his diagnosis of OCD was confirmed (Salvatore, 1999).
Adam Lanza, who killed 20 students, six staff, and then his mother in Newtown, Connecticut

Copycat Attacks

There is no evidence to suggest that a school attack will lead to “copycat” violence (Dill et al., 2011). First-hand or media exposure to school violence is not a predictor of future violence.

Violent Video Games

Dylan Klebold and Eric Harris, who carried out the attacks at Columbine High School, played the video game, “Doom,” in which they played the role of shooters. There is inconsistent evidence that media violence, including video games,
increases aggression. There is a potential for a dose/response relationship, but not every exposure to media violence leads to aggression. Studies thus far have focused on the role of media violence on non-fatal aggression, such as sexual harassment. These studies have shown widespread individual variation, and that media and video game exposure cannot necessarily be classified as “good” or “bad” (Dill et al., 2011).

Inadequate Sleep

Based on data from the Youth Risk Behavior Survey, insufficient sleep correlates with multiple behavioral health problems in adolescents: poor academic performance, delinquency, irritability and poor stress tolerance, depression, suicidal ideation, and conduct disturbances. Male adolescents who reported inadequate sleep had higher odds of reporting carrying a firearm to school, and had greater reported impulsivity (Hildebrand, Daly, Nicholls, Brooks-Holliday, & Kloss, 2013).

The Role of Gender

Studies of violence have indicated that women are capable of violence but the quantity and type of violence they perpetrate is different from male counterparts. There is a paucity of data on the subject since there are no gender-specific prediction tools. Existing data suggests that women, including female adolescents, are less likely to perpetrate violence against strangers, less likely to perpetrate violence that results in a need for medical attention (Odgers, Moretti, & Reppucci, 2005).

Multiple studies suggest that women have a propensity to “tend and befriend” in adversarial relationships, whereas men tend to have a “fight or flight” responses (Teasdale et al., 2006). There is no evidence to support the use of violence prediction instruments in adolescent women. (Odgers et al., 2005).
Firearms and Rampage Violence

The American Academy of Pediatrics (AAP) reviewed results from the 2011 Youth Risk Behavior Survey (YRBS): 5.1 percent of high school students self-reported carrying a firearm to school during the previous month. Male students reported carrying a firearm more than eight times more often than female students (Dowd & Sege, 2012). The YRBS is a self-report survey, so this data is based on unconfirmed reports of carrying a firearm.

In addition to male gender, The AAP analysis identified gang membership, substance abuse, a history of victimization, and a history of violence as risk factors for carrying a firearm to school. Furthermore, adolescents typically over-estimated the proportion of their peers who carried weapons to school. This “normative assumption” correlated with greater likelihood of a student carrying a firearm (Dowd & Sege, 2012).

Tec-9 assault weapons for sale online at tec9guns.com

National studies of firearm-related violence are limited. In 1996, the US Congress approved an amendment to an appropriations bill that effectively removed firearm studies by the Centers for Disease Control and Prevention (CDC). The CDC is forbidden from funding any study that might “advocate or promote gun control” (Frankel, 2015).

In developmental terms, carrying a firearm can be viewed as a maladaptive and dangerous means of coping with adolescent development. The AAP cites carrying a firearm as a function following aspects of adolescent growth and development:

1. Search for identity and autonomy
2. Curiosity
3. Rites of passage
4. Feelings of invincibility
5. Impulsivity
6. Mood swings (Dowd & Sege, 2012)

The combination of carrying a firearm and substance abuse is particularly problematic. In clinical trials, alcohol impairs judgment about when use of a firearm might be appropriate. And when such a weapon is used, the influence of alcohol reduces shooting accuracy (Carr, Wiebe, Richmond, Cheney, & Branas, 2009). Furthermore, firearm owners are more likely to engage in other risk-taking behaviors, such as drinking and driving, consuming more than 60 drinks per month, and unsafe gun ownership: heavy alcohol users are more likely to keep firearms loaded and unlocked (Wintemute, 2011). Although these studies were conducted with adult subjects, the “normal” risk taking and impulsivity of adolescents is a dangerous combination with substance abuse and firearm access.

Clinicians are in complex medico-legal territory when talking with patients about firearm ownership. Although the American Academy of Pediatrics advises discussing firearm safety as part of standard anticipatory guidance, this is not always legal. In 2014, the Florida Privacy of Firearm Owners Act passed in a 2–1 vote in the US Court of Appeals. This act forbids any healthcare provider from asking patients about firearm ownership, as this is deemed to be a violation of the patient’s privacy. Physicians opposed the act, deeming it to be a restriction of their First Amendment rights. The court ruled the Act had “only an incidental effect on physician’s speech.” It is anticipated that more states will pass similar legislation, and clinicians must be aware of state regulations that impact their ability to ask questions or offer preventive guidance about firearms (Hamblin, 2014).

The Florida Privacy of Firearm Owners Act is not absolute. It does permit clinicians to inquire about access to firearms or discuss firearm safety if it is deemed relevant to a patient’s care (Hamblin, 2014). Therefore, clinician in Florida cannot ask or advise about firearms during a routine visit, but it is permissible to inquire in the event that the patient has disclosed potential plans to inflict harm on his or herself or on others.

Planning and Arsenals

Although impulsivity could lead to a final conscious or subconscious decision to carry out a rampage attack, school shooters appear to plan for months and collect “arsenals” of weapons and ammunition. This is analogous to bomb attacks at schools. A joint study by the United States Secret Service and Department of Education found that 95 percent of school bombings were planned, some up to one year in advance (Voskuil, Fein, Reddy, Borum, & Modzeleski, 2002).

- In the months prior to his attack at the Century Theater, James Eagan Holmes
purchased 3,000 rounds of handgun ammunition, 3,000 rounds for a semi-automatic rifle, and 350 shells for a shotgun (Dao, 2012). Holmes wrote a 29-page notebook, in which he pondered his perceived pros and cons of various means and venues of mass murder (Almasy, 2015).

- Eric Harris also maintained a journal prior to his attack at Columbine High School. The journal included details of how he planned to obtain weapons for his attack. He wrote this about a year prior to the attack Harris and his classmate, Dylan Klebold, developed an arsenal of a double-barrel shotgun, a TEC-9 semiautomatic assault weapon, a sawed-off shotgun, a 9 mm semiautomatic rifle, a propane tank and fuse, and more than 30 pipe bombs (Cullen, 2009).

- Adam Lanza prepared an arsenal including 1,000 rounds of ammunition, samurai swords, and a bayonet. Police searched the Lanza home after Lanza killed his mother, 20 children, six adults, and himself. The search revealed a holiday card from Nancy Lanza to her son, Adam. The card included a check for him to purchase another gun (Susman, 2013).

The efforts undertaken to prepare for these rampage attacks were elaborate. There is no screening tool to identify a patient who might be collecting such an arsenal or documenting plans for an attack. Likewise, firearm ownership is legal, and writing violent thoughts in a journal or concerning thoughts is not cause for a watch not a warning.

Specifics and planning should be taken into consideration if a patient has raised concerns for violent potential. In the case of interpreting a bomb threat to a school, the specificity of the threat is an indicator of its severity (Vossekuil et al., 2002).

A patient who expresses specific plans, such as a method, location, date, or specific potential victims of an attack, has moved from a watch to a warning. This is an indication to seek immediate collaboration with colleagues, including but not limited to mental health providers, families, schools, and law enforcement.

Under the Health Insurance Portability and Accountability Act (HIPAA), a provider may disclose protected health information if there is a “good faith” effort to lessen the threat of “serious and imminent” threat to self and safety. The law expressly permits disclosure to family and to law enforcement (U.S. Department of Health and Human Services, 2008).

The medical and mental health services at post-secondary institutions are largely governed by the Family Education Rights and Privacy Act (FERPA), which contains similar to language about “good faith” and a “serious and imminent threat” (U.S. Department of Health and Human Services and U.S. Department of Education, 2008). Primary care providers should acquaint themselves with the federal privacy rules that govern their practice environments as well as state administrative codes that also govern patient privacy.
Duty to Warn

All healthcare providers working with a potentially violent patient need to be cognizant of their duty to warn a potential victim of a violent crime.

The “duty to warn” concept was articulated as early as the 1950s, when the American Psychological Association (APA) stated that it is ethical to breach confidentiality when there is a “clear and imminent danger to an individual and society” (Huey, 2015). In 1976, it became the provider’s legal obligation to inform the potential victim (Burgess et al., 2015).

This “duty to warn” is sometimes referred to as a “Tarasoff Warning.” Prosenjit Poddar, a graduate student at the University of California Berkeley, expressed his wishes to inflict harm on a woman who had rejected his advances, Tatiana Tarasoff. Poddar sought care at the university’s counseling service. The providers at the counseling service informed the university police that Poddar had plans to harm an unnamed victim. Tarasoff herself was not informed. The university police interviewed Poddar; he denied any intent to harm Tarasoff, and the Chief of Psychiatry ordered that documentation involving the university police be destroyed. Prosenjit purchased a firearm two months later, shot, and killed Tatiana Tarasoff (Burgess et al., 2015).

The case against the University of California was originally dismissed by the lower court (Alameda County), but the California Supreme Court ruled that Tarasoff’s death was preventable (Burgess et al., 2015).

Some healthcare providers have argued that Tarasoff Warnings may be counterproductive since a patient may not disclose violent intent if he or she is
aware that a breach of confidentiality is possible. But there is clear legal precedent that providers have an obligation to execute a Tarasoff Warning if there is sufficient concern for a victim’s safety (Huey, 2015). Just like a duty to breach confidentiality for an actively suicidal patient, providers have a responsibility to breach confidentiality for an actively homicidal patient.

A similar case arose in 2010. Kenneth Chapman visited the emergency department three times for severe depression. He was discharged from the emergency department on each occasion. Chapman subsequently murdered his wife, four children, and himself. His two surviving children reportedly settled with the hospital system for $11.5 million because there was a “clear, imminent, and reasonably foreseeable danger of harm by a patient to a known victim” (Burgess et al., 2015).

The “clear, imminent, and reasonably foreseeable danger of harm” criteria are difficult to fulfill. Lynne Fenton MD, a psychiatrist at the University of Colorado Medical Campus, testified that James Holmes never expressed specifics about a target or intent to harm anyone. He expressed homicidal ideation, but did not express his plan, intent, or means, which therefore prevented Fenton from breaching confidentiality or pursuing civil commitment. Without an articulated victim, there were no grounds for a Tarasoff Warning. Although Holmes was preparing a cache of weapons and had selected a target, he never articulated this to Fenton. Holmes subsequently killed 12 at an Aurora, Colorado movie theater (O’Neill & Weisfeldt, 2015).

James Eagan Holmes, who murdered 12 and injured 70 at the Century Movie Theatre

Implications for Primary Care Providers
1. Despite the devastating impact of a school shooting, the statistical likelihood is small.
2. Due to the small study population, there is no clear, consistent “profile” of a potential rampage killer in any population (adolescent, young adult, or adult.)
3. Substance abuse, male gender, and access to firearms are the most consistent predictors of rampage violence.
4. Although mood disorders, compulsive traits, antisocial personality traits, and thought disorders can play a role in violence, these are not consistent predictors.
5. Actuarial risk assessments can contribute to an assessment, but have poor statistical reliability.
6. Medico-legal issues involving breaching confidentiality and inquiries or advice about firearms should not stop any provider from taking action. With collaboration, and legal consultation if warranted, the duty to warn and to protect the patient and public supersede privacy laws.
7. Do not worry alone. Risk assessment is complex, and warrants immediate consultation and concerted action.
8. There is an ongoing need for further research, particularly involving the effective use of actuarial models, exploring the role of compulsive personalities, and identifying the most reliable risk factors or constellation of factors so that attacks can be prevented.

Many primary care providers have had the experience of working with a patient who created anxiety about violence. These are often patients within the realm of a “tornado watch:” multiple “ingredients” for violence are present, but predictive science is not yet adequate to identify what might cause a particular thunderstorm to spawn a tornado and what might cause a troubled adolescent or young adult to commit a mass murder. Clinicians walk a line between confidentiality and duty to warn, the need to take action and the need to recognize what constitutes unsettling but not violent behavior.

Primary care providers should be aware that there is no reliable method of predicting rampage violence, but collaboration and respecting the duty to warn where applicable are important for every clinician. There is a clear need for further research into the prediction of rampage violence, but it is a difficult area to study due to the small study population.
Nancy Lanza, who was shot at close range by her son. In the Lanza home, police found a holiday card from Mrs. Lanza to her son. It included a check for him to purchase another firearm.

References

Almasy, S. (2015). In notebook read to jury, James Holmes wrote of ‘obsession’: CNN.


CNN. (2007). Killer’s manifesto: “You forced me into a corner”: CNN.


Where the HIPAA Privacy Rule applies, does it permit a health care provider to disclose protected health information (PHI) about a patient to law enforcement, family members, or others if the provider believes the patient presents a serious danger to self or others? Retrieved from http://www.hhs.gov/ocr/privacy/hipaa/faq/ferpa_and_hipaa/520.html


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One editor at an academic journal declined to publish it, saying, “If rampage killings are so rare, why should we study them?”
Champions are built in the off-season. We have Personal Training, Semi-Private Training (SPT) and Group training available. We can also create a custom program for teams or groups of friends who want to train together at a time other than what is currently offered. Get Started. Summer Semi-Private Training (SPT).

Settlement. Programs. Drop in activities. Membership. Careers. Contact Us. Welcome to The Spot. About Us. Settlement. Programs. Drop in activities. Membership. The SPOT program is a derivative of other behavioral analysis programs that have been successfully employed by law enforcement and security personnel both in the U.S. and around the world. This PIA update reflects that TSA will pilot the use of BDOs as part of the security checkpoint process, by incorporating BDO interaction with passengers. The SPOT Product Replacement Program offers registered SPOT users the ability to quickly replace your damaged, lost or stolen SPOT device so you keep receiving security and peace-of-mind for both you and your loved ones. $50.00 deductible for SPOT X and $30.00 deductible for all other device replacements. SPOT S.O.V. is a 24/7 roadside vehicle assistance program that gets help for you and your car, SUV, ATV, RV, trailer or motorcycle with the simple push of a button.