Could Better Psychological Testing Prevent a Tragedy Like the Germanwings Crash?

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Probably not.

By Alison Griswold

A Germanwings plane sits on the tarmac on March 24, 2015, at the airport in Duesseldorf, where the crashed Germanwings airplane was due to land.

Photo by Sascha Schuermann/AFP/Getty Images

We still don't know exactly what happened on Germanwings Flight 9525, leading to the death of co-pilot Andreas Lubitz and the 149 other people on board. But on Thursday, the chief prosecutor for the investigation said the evidence so far indicates that Lubitz consciously and deliberately steered the plane into the French Alps, and that asking about pilot suicide was "**a legitimate question**." In a press conference on Thursday, Carsten Spohr, the CEO of Germanwings' parent company Lufthansa, said that possibility alone was "the worst nightmare that anyone can have in our company." Yet Spohr maintained that Lubitz had passed both his medical and psychological tests with flying colors, and that his abilities as a pilot were never in doubt.

As of Friday morning, prosecutors are saying that documents found in Lubitz's home show he was being treated for a medical condition that he **hid from his employer**. One doctor's note excused Lubitz from work on the day of the crash; another had been torn up. *Der Tagesspiegel*, a German newspaper, is reporting that Lubitz was **being treated in the university clinic in Dusseldorf for depression**, citing sources inside the investigation.

If it ultimately turns out that Lubitz was grappling with some sort of psychiatric condition that made him unfit to fly, then Lufthansa's screenings failed to turn it up. Would that mean the airline was to blame?

First off, it's helpful to understand that how airlines screen pilots for physical and mental health varies widely by both country and company. In the United States, the Federal Aviation Administration **requires** scheduled airline pilots under the age of 40 to pass a medical certification exam once a year, and those 40 and older to obtain a new certificate every six months. Part of the medical standard is psychological. Federal regulations **state** that pilots must have no medical history or clinical diagnosis of severe personality disorder, psychosis, bipolar disorder, or substance dependence. The problem is that mental health can be much more difficult to assess than physical health. If someone has an irregular heart rate, odds are an aviation medical examiner will catch it during an exam. But depression? Bipolar disorder? They can be much tougher to pin down.

"Aviation medical examiners are not psychiatrists, they're not psychologists," says Warren Silberman, who was the FAA's manager of aerospace medical certification from 1997 to 2011. Instead, pilots are required to fill out an application that includes questions about whether they have ever had "mental disorders of any sort," "substance dependence," and a "suicide attempt," among other things.

Of course, it's possible that some applicants who have suffered from these conditions won't answer honestly. The latest reports indicate Lubitz very well may have suffered from depression, which he may have kept from Lufthansa. But that's not surprising—after all, if prospective pilots think admitting to a history of mental illness, even involving a common condition like depression, could jeopardize their job chances, they have little incentive to tell the truth.

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Diane Damos, aviation psychology expert

The FAA knows this. "A brand-new pilot is a toughie—the exam is an honor system—but if somebody finds out that a person has falsified, then the FAA will go after them legally and, believe me, there are ways," Silberman says. "The FAA has a hotline to make complaints. The FAA will receive letters in the mail, and some of them are vindictive, but every time someone makes a complaint it has to be investigated." The written application also asks whether applicants have ever been convicted of drunken driving, and every answer is crosschecked against a national registry. Pilots who are found to have falsified information can face fines of up to $250,000.

In the European Union, the basic medical standards for pilots are set by the European Aviation Safety Agency. But companies can always choose to set a much higher bar—and within the industry, it's widely agreed that Lufthansa does.

"Lufthansa has one of the most complete and exhaustive selection processes that there is," says Diane Damos, president of Damos Aviation Services and an expert in aviation psychology. "It's days and days of standardized testing, all sorts of cognitive abilities, interviews with clinical psychologists—it is extensive."

The *Frankfurter Allgemeine Zeitung*, a German newspaper, **reported Thursday** that Lufthansa's selection procedures test "perceptual speed and orientation skills, sensory-motor coordination, ability to multitask in complex situations, relevant personality traits (such as motivation and teamwork), technical and physical knowledge, English language ability, computational and logical thinking, concentration and attention skills." On top of all that, "a large part of the selection process tests the ability to handle stress," the paper notes. "Tests must be passed in which one must listen to sequences of letters over headphones while

simultaneously responding to light signals on a screen by pressing keys with the feet and hands. Anyone who gets hectic or pushes the wrong button too often fails."

In short, Lufthansa is already going above and beyond what's required. Should it—and every other airline—be doing more?

The practical answer is probably not. Subjecting every prospective pilot to intensive psychometric screening would be time-consuming and expensive. Silberman says full-scale personality testing runs between $2,500 and $3,500 per person and takes about six hours to complete. "They don't do them routinely," he says. "They're mainly used if somebody has a stroke, or had major depression, or was hospitalized." In the U.S., where there were an estimated 600,000 active pilots at the end of 2013, that kind of testing would consume 3.6 million hours and $1.8 billion at the midpoint of the price range. For all that, it might not even necessarily be effective.

"Any test that you give has what we would call false negatives and false positives," Damos explains. With psychometric screening, a false negative could mean missing someone who has suicidal tendencies, and a false positive could mean saying someone has suicidal tendencies when they really don't. "If you were to put one of these in place, you could screen out a lot of people as suicidal who really aren't, and that could ruin a lot of people's careers and cause a lot of collateral damage," she says.

Perhaps more to the point, while incidents of the sort that befell Germanwings Flight 9525 are incredibly tragic, they're also incredibly rare. It should be telling that the most cited comparison to the Germanwings crash has been the**suspected suicide** of a relief first officer on a Cairo-bound EgyptAir flight that killed 217 people. That was in 1999. Last year a**report** released by the FAA found that between 2003 and 2012, only eight of 2,758 fatal aviation accidents in the U.S. were deemed "aircraft-assisted suicides." Four of the eight pilots tested positive for alcohol, and two were positive for antidepressants. "Aircraft-assisted suicides are tragic, international events that are hard to predict and difficult to prevent," the report stated.

"Air travel is stunningly safe. I mean really, unbelievably safe," Damos says. "Can we ever get it to perfect safety? Well, that's something we'd all like to do, but we're not there yet. Human beings are complex—and they change."