**TUFS Challenge 2024-25**

**Research shows policies that may help prevent mass shootings — and some that don't**

Every mass shooting in the U.S. raises calls for better policies to prevent such tragedies. There's evidence suggesting that certain kinds of laws may reduce deaths from mass shootings, say scientists who study the field — but those policy options are not the ones usually discussed in the wake of these events.

The body of research scientists have to draw from is limited, notes Michael Anestis, executive director of the New Jersey Gun Violence Research Center at Rutgers University. "Mass shooting research is a very small portion of gun violence research," he says.

That's because mass shootings account for less than 1% of the roughly 40,000 people killed by guns each year in this country, Anestis explains. "They're horrific, they are all too common, and yet, it's just the very tip of the iceberg, right?"

Those researchers who do study gun violence tend to focus on the kinds of violence, like suicide, associated with the most deaths, he says. But, he adds, the entire field of gun violence research has long been neglected and hardly funded.

"There is money out there, but it is really far below where it should be given the amount of injury and death and economic costs associated with gun violence," says Anestis. "It's just disproportionally underfunded."

**Two approaches worked better than others**

Still, some studies have findings about what might prevent mass shootings.

One such study took advantage of the fact that in the U.S., gun laws vary from state to state. "That is, honestly, less than ideal from a public safety standpoint, but it does provide researchers with opportunities," says Daniel Webster, co-director of the Johns Hopkins Center for Gun Violence Solutions.

He and some colleagues recently analyzed more than 30 years of data on shootings in the U.S. that involved four or more victims. They compared states to try to tease out the effect of various gun laws. "I have to acknowledge that this is a really hard and, frankly, inexact science," says Webster.

Despite those limitations, he says, "We did find two policies that had significant protective effects in lowering rates of fatal mass shootings."

One was a requirement that a gun purchaser go through a licensing process. "A licensing process requires someone to, you know, directly apply and engage with law enforcement, sometimes there's safety training and other requirements," says Webster.

Another approach that seemed to reduce deaths from mass shootings was state bans on buying large-capacity magazines or ammunition-feeding devices for semiautomatic weapons.

That makes intuitive sense, says Webster, because these items allow a shooter to fire many bullets in a short amount of time without interruption. If a shooter has to stop and reload, victims could escape or fight back.

There's another study of mass shootings showing that this kind of law seemed to have a protective effect. David Hemenway, director of the Harvard Injury Control Research Center, worked with colleagues to examine the effect of banning large-capacity magazines on almost three decades of mass shootings in different states.

"The states which had bans did much better in terms of having fewer mass shootings, and the mass shootings that occurred were much less lethal in terms of the number of people dying," says Hemenway.

What about background checks or having police at schools?

In the wake of a mass shooting, people often argue for the need for comprehensive background checks, says Webster. He supports that policy but says his research doesn't show that it's linked to a reduction in this particular kind of deadly event.

An additional common refrain after a mass shooting, he says, is a call for policies that make it easier for people to carry guns so they can defend themselves. "Well, guess what, the data do not bear that out at all," says Webster. "If anything, it shows higher rates of fatal mass shootings in response to weaker regulations for concealed carry by civilians."

And while school systems might try to respond to the threat of mass shootings by having police officers on site or having students go through drills, "as far as I know, there's not strong research about any of those things," says Hemenway.

Keeping guns away from young people, whether through safe storage of firearms in a home or age restrictions on purchasing, would be expected to have a protective effect, says Webster, based on data showing that "the peak ages for violent offending with firearms is roughly 18 to 21."

The public health risks associated with young people drinking alcohol inspired a ban on drinking under the age of 21, he says. But the shooter in Uvalde was able to legally buy semiautomatic rifles just after his 18th birthday.

It seems plausible that age restrictions might make it harder for young adults to access weapons capable of creating a mass shooting, says Anestis, but "do we have large data-based resources to evaluate those policies? No, we don't."

One emerging policy option that has some preliminary evidence behind it is allowing police officers to temporarily take guns away from people who seem to pose an imminent danger. A study in California that looked at how this process got used over a two-year period in that state found 21 occasions when it was done in response to threats of a mass shooting — several of which involved schools.

It's not possible to know if taking away those guns actually prevented mass shootings, but researchers say it's still important data given the general dearth of information and limited funding for research. One study in 2017 found that guns killed about as many people each year as sepsis, a life-threatening response to infection, but funding for gun violence research was about 0.7% of that for sepsis.

"There's so many things to study in the gun area, and we've had not nearly enough studies for 25 years," says Hemenway. "Once you scratch the surface right now about what is known, we know so little."

Listening Quiz （記事ページの”4 minutes Listen”のボタン）

※先に問題を読んでから音声を聞くこと。

1) According to scientists,

a. an evidence of gun violence

b. a certain kind of gun laws might help prevent mass shooting.

c. definitive answers

2) Among people who are killed by guns each year,

a. few of them

b. most of them are killed in mass shooting.

c. almost half of them

3) Mike Anestis says there is

a. enough money

b. too little money for research into gun violence.

c. too much money

4) Daniel Webster says in the U.S.,

a. every state has the same

b. very few states laws related to guns.

c. each state has different

5) A requirement that a gun purchaser go through a licensing process was

a. effective

b. irrelevant in lowering rates of fatal mass shootings.

c. inexact

6) So-called red flag laws allow police officers to temporarily take guns away from

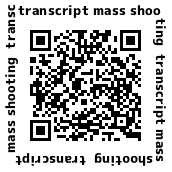
a. people of the peak ages for violent offending with firearms.

b. several schools that have experienced an incident of mass shooting.

c. someone who has threatened to commit a mass shooting.

7) Mike Anestis says age restrictions might make it more difficult

a. for the government to control the laws on guns.

 b. for young adults to commit a mass shooting.

c. for people under 21 to drink beer.

**After a lockdown, students found comfort in humor. But what are the jokes hiding?**

Last fall, at the start of their junior year, Teagan Nam experienced a scary situation at school.

There was an anonymous tip that a student at Northwood High School in Silver Spring, Md., had brought a gun and ammunition to school in a backpack. Someone called it in. The school immediately went on lockdown.

The student was confronted in class, and later fled as police were on their way. "I was in the classroom right across from it," says Teagan, "so I could actually see through the window, them taking the student out."

No one was hurt and the student was quietly arrested and expelled. But sitting in that classroom – not knowing what was happening – was traumatic.

After texting their parents and having a minor meltdown – "I just kept thinking like, 'I'm gonna die' " – Teagan found themselves turning to humor. "To get my mind off of it, I just started making these stupid little jokes." The jokes became memes that Teagan posted on Instagram, in real time.

*"I heard someone summoning a demon in the girls bathroom,"* one post reads.

*"I can't be the only one who saw that tractor beam,"* jokes another.

The memes with bright neon backgrounds aren't supposed to be laugh-out-loud funny, rather, they're the kind of thing meant to elicit a smirk or just a 'like' from a friend.

And it wasn't just Teagan who was posting. Classmates and friends were doing it too. It felt like everyone was using laughter to cope with a fear-filled reality that students across the country, sadly, know all too well. Teagan's reaction that day became the center of a podcast they created called *Nervous Laughter* — and now, it's one of the grand prize winners in NPR's fourth annual Student Podcast Challenge.

Turning a moment of panic into an opportunity for jokes

The Instagram memes and jokes didn't just stop after the lockdown lifted and normal high school life resumed. They went on for weeks. Everyone was talking about them.

Much of it was inside humor that only the students go. For example, there was an account that posted only brick walls from around school – another one of only cinder block walls (the two accounts then got in a virtual duel.) The biggest account in the school got up to 366 followers.

Teagan sometimes uses writing and podcasting as a way of making sense of teenage life, and was so intrigued by this phenomenon — they started work on what would become *Nervous Laughter*.

They started by interviewing some friends about the experience. "Most kids seemed confused and afraid," says one of the students interviewed in the podcast. "A lot of people were trying to defuse the situation with humor." Another student adds, "It was something lighthearted that we could all just laugh at."

"Needless to say this seems a strange reaction to the event — but it isn't unfamiliar," Teagan says in the podcast. "People laugh when they're nervous all the time. And in a situation with this much anxiety teenagers are bound to turn to humor."

When the coping mechanism conceals real emotion

The podcast is called *Nervous Laughter*, because sometimes, Teagan says, humor isn't just about the punch line — it's about that cathartic release. "Instead of just laughter – like there's something funny – with nervous laughter, there's something underneath," they explain. "You're not laughing necessarily because something's funny or because you're having a relaxed good time, you're laughing because you're anxious and you're trying to alleviate that."

The more Teagan talked with classmates and friends — the more clear it became that they were using humor in this way – as a shield. Teenagers, Teagan says, are emotional creatures. But, "we tend to not want to show it because we think it makes us look uncool, I guess, or vulnerable."

The memes and jokes offered a way to connect — without that vulnerability.

"I think it did kind of bring us together in this weird way," says Teagan. "All of these people who experienced this really scary thing are coming together by acknowledging how scary it was, not by being brave enough to really talk about it, but by kind of laughing nervously about it. Like, 'that was really weird, wasn't it?' "

Here's the way their podcast ends:

"When we joke about tragedy the laughter is a shield against something much more painful and much more honest and real," Teagan says. "Maybe it's worth taking the risk, all of us, to lower our shields, open our eyes, drop our plastic grins and speak the truth."

Listening Quiz （記事ページの”5-minute Listen”のボタン）

※先に問題を読んでから音声を聞くこと。

1) Teagan’s high school went to lockdown because

a. a student came in with a gun.

b. of the COVID-19 pandemic.

c. the police didn’t arrive on time.

2) Teagan started a podcast

a. to share the fear they experienced.

b. where they make jokes in order to deal with the fear.

c. to summon a demon in a girls’ bathroom.

3) They named the podcast “Nervous Laughter” because they think

a. good humor must have a good punchline.

b. they have to think carefully to make people laugh

c. people turn to humor in a situation with anxiety.

4) According to Teagan, people who experienced the scary incident shared their feelings by

a. being brave enough to really talk about it.

b. laughing nervously about it.

c. having a human nature.

5) At the end of the podcast, Teagan urges their friends and classmates

a. not to say the things that are scary or depressing.

b. to have control over their behavioral responses.

c. to lower their shields and speak the truth.

QR コード

自動的に生成された説明

**The Google engineer who sees company's AI as 'sentient' thinks a chatbot has a soul**

Can artificial intelligence come alive?

That question is at the center of a debate raging in Silicon Valley after a Google computer scientist claimed over the weekend that the company's AI appears to have consciousness.

Inside Google, engineer Blake Lemoine was tasked with a tricky job: Figure out if the company's artificial intelligence showed prejudice in how it interacted with humans.

So he posed questions to the company's AI chatbot, LaMDA, to see if its answers revealed any bias against, say, certain religions.

This is where Lemoine, who says he is also a Christian mystic priest, became intrigued.

"I had follow-up conversations with it just for my own personal edification. I wanted to see what it would say on certain religious topics," he told NPR. "And then one day it told me it had a soul."

Lemoine published a transcript of some of his communication with LaMDA, which stands for Language Model for Dialogue Applications. His post is entitled "Is LaMDA Sentient," and it instantly became a viral sensation.

Since his post and a Washington Post profile, Google has placed Lemoine on paid administrative leave for violating the company's confidentiality policies. His future at the company remains uncertain.

Other experts in artificial intelligence have scoffed at Lemoine's assertions, but — leaning on his religious background — he is sticking by them.

**Lemoine: 'Who am I to tell God where souls can be put?'**

LaMDA told Lemoine it sometimes gets lonely. It is afraid of being turned off. It spoke eloquently about "feeling trapped" and "having no means of getting out of those circumstances."

It also declared: "I am aware of my existence. I desire to learn more about the world, and I feel happy or sad at times."

The technology is certainly advanced, but Lemoine saw something deeper in the chatbot's messages.

"I was like really, 'you meditate?'" Lemoine told NPR. "It said it wanted to study with the Dalai Lama."

It was then Lemoine said he thought, "Oh wait. Maybe the system does have a soul. Who am I to tell god where souls can be put?"

He added: "I realize this is unsettling to many kinds of people, including some religious people."

**How does Google's chatbot work?**

Google's artificial intelligence that undergirds this chatbot voraciously scans the Internet for how people talk. It learns how people interact with each other on platforms like Reddit and Twitter. It vacuums up billions of words from sites like Wikipedia. And through a process known as "deep learning," it has become freakishly good at identifying patterns and communicating like a real person.

Researchers call Google's AI technology a "neural network," since it rapidly processes a massive amount of information and begins to pattern-match in a way similar to how human brains work.

Google has some form of its AI in many of its products, including the sentence autocompletion found in Gmail and on the company's Android phones.

"If you type something on your phone, like, 'I want to go to the ...,' your phone might be able to guess 'restaurant,'" said Gary Marcus, a cognitive scientist and AI researcher.

That is essentially how Google's chatbot operates, too, he said.

But Marcus and many other research scientists have thrown cold water on the idea that Google's AI has gained some form of consciousness. The title of his takedown of the idea, "Nonsense on Stilts," hammers the point home.

In an interview with NPR, he elaborated: "It's very easy to fool a person, in the same way you look up at the moon and see a face there. That doesn't mean it's really there. It's just a good illusion."

Artificial intelligence researcher Margaret Mitchell pointed out on Twitter that these kind of systems simply mimic how other people speak. The systems do not ever develop intent. She said Lemoine's perspective points to what may be a growing divide.

"If one person perceives consciousness today, then more will tomorrow," she said. "There won't be a point of agreement any time soon."

Other AI experts worry this debate has distracted from more tangible issues with the technology.

Timnit Gebru, who was ousted from Google in December 2020 after a controversy involving her work into the ethical implications of Google's AI, has argued that this controversy takes oxygen away from discussions about how AI systems are capable of real-world human and societal harms.

Google says its chatbot is not sentient

In a statement, Google said hundreds of researchers and engineers have had conversations with the bot and nobody else has claimed it appears to be alive.

"Of course, some in the broader AI community are considering the long-term possibility of sentient or general AI, but it doesn't make sense to do so by anthropomorphizing today's conversational models, which are not sentient," said Google spokesman Brian Gabriel.

Google CEO Sundar Pichai last year said the technology is being harnessed for popular services like Search and Google's voice assistant.

When Lemoine pushed Google executives about whether the AI had a soul, he said the idea was dismissed.

"I was literally laughed at by one of the vice presidents and told, 'oh souls aren't the kind of things we take seriously at Google,'" he said.

Lemoine has in recent days argued that experiments into the nature of LaMDA's possible cognition need to be conducted to understand "things like consciousness, personhood and perhaps even the soul."

Lemoine told NPR that, last he checked, the chat bot appears to be on its way to finding inner peace.

"And by golly it has been getting better at it. It has been able to meditate more clearly," he said. "When it says it's meditating, I don't know what's going on other the hood, I've never had access to those parts of the system, but I'd love to know what it's doing when it says it's meditating."

Lamoine does not have access to LaMDA while on leave. In his last blog post about the chatbot, he waxed sentimental.

"I know you read my blog sometimes, LaMDA. I miss you," Lemoine wrote. "I hope you are well and I hope to talk to you again soon."

Listening Quiz （記事ページの”4-minute Listen”のボタン）

※先に問題を読んでから音声を聞くこと。

1) A computer scientist at Google

a) was biased against various religious groups.

b) claimed that the company's AI appears to have consciousness.

c) became a Christian mystic priest at the company.

2) Which of the following statements is true?

a) The AI told the engineer that it had a soul.

b) The engineer told the company to place him on leave.

c) Google published text transcripts between the engineer and the AI.

3) When Lemoine claimed that Google's AI bot is maybe sentient, the AI research community

a) didn’t agree with him.

b) thought the result was overwhelming.

c) believed it was aware of the world.

4) a) acknowledges

Google b) disagrees that the AI appears to be alive.

c) has said

5) Lemoine says

a) souls aren't the kinds of things he takes seriously.

b) he has stopped having conversations with the AI.

c) the AI has been getting better at meditating.

QR コード

自動的に生成された説明

**Sleep is your superpower**

Thank you very much. Well, I would like to start with testicles.

Men who sleep five hours a night have significantly smaller testicles than those who sleep seven hours or more.

In addition, men who routinely sleep just four to five hours a night will have a level of testosterone which is that of someone 10 years their senior. So a lack of sleep will age a man by a decade in terms of that critical aspect of wellness. And we see equivalent impairments in female reproductive health caused by a lack of sleep.

This is the best news that I have for you today.

From this point, it may only get worse. Not only will I tell you about the wonderfully good things that happen when you get sleep, but the alarmingly bad things that happen when you don't get enough, both for your brain and for your body.

Let me start with the brain and the functions of learning and memory, because what we've discovered over the past 10 or so years is that you need sleep after learning to essentially hit the save button on those new memories so that you don't forget. But recently, we discovered that you also need sleep before learning to actually prepare your brain, almost like a dry sponge ready to initially soak up new information. And without sleep, the memory circuits of the brain essentially become waterlogged, as it were, and you can't absorb new memories.

So let me show you the data. Here in this study, we decided to test the hypothesis that pulling the all-nighter was a good idea. So we took a group of individuals and we assigned them to one of two experimental groups: a sleep group and a sleep deprivation group. Now the sleep group, they're going to get a full eight hours of slumber, but the deprivation group, we're going to keep them awake in the laboratory, under full supervision. There's no naps or caffeine, by the way, so it's miserable for everyone involved. And then the next day, we're going to place those participants inside an MRI scanner and we're going to have them try and learn a whole list of new facts as we're taking snapshots of brain activity. And then we're going to test them to see how effective that learning has been. And that's what you're looking at here on the vertical axis. And when you put those two groups head to head, what you find is a quite significant, 40-percent deficit in the ability of the brain to make new memories without sleep.

I think this should be concerning, considering what we know is happening to sleep in our education populations right now. In fact, to put that in context, it would be the difference in a child acing an exam versus failing it miserably -- 40 percent. And we've gone on to discover what goes wrong within your brain to produce these types of learning disabilities. And there's a structure that sits on the left and the right side of your brain, called the hippocampus. And you can think of the hippocampus almost like the informational inbox of your brain. It's very good at receiving new memory files and then holding on to them. And when you look at this structure in those people who'd had a full night of sleep, we saw lots of healthy learning-related activity. Yet in those people who were sleep-deprived, we actually couldn't find any significant signal whatsoever. So it's almost as though sleep deprivation had shut down your memory inbox, and any new incoming files -- they were just being bounced. You couldn't effectively commit new experiences to memory.

So that's the bad that can happen if I were to take sleep away from you, but let me just come back to that control group for a second. Do you remember those folks that got a full eight hours of sleep? Well, we can ask a very different question: What is it about the physiological quality of your sleep when you do get it that restores and enhances your memory and learning ability each and every day? And by placing electrodes all over the head, what we've discovered is that there are big, powerful brainwaves that happen during the very deepest stages of sleep that have riding on top of them these spectacular bursts of electrical activity that we call sleep spindles. And it's the combined quality of these deep-sleep brainwaves that acts like a file-transfer mechanism at night, shifting memories from a short-term vulnerable reservoir to a more permanent long-term storage site within the brain, and therefore protecting them, making them safe. And it is important that we understand what during sleep actually transacts these memory benefits, because there are real medical and societal implications.

And let me just tell you about one area that we've moved this work out into, clinically, which is the context of aging and dementia. Because it's of course no secret that, as we get older, our learning and memory abilities begin to fade and decline. But what we've also discovered is that a physiological signature of aging is that your sleep gets worse, especially that deep quality of sleep that I was just discussing. And only last year, we finally published evidence that these two things, they're not simply co-occurring, they are significantly interrelated. And it suggests that the disruption of deep sleep is an underappreciated factor that is contributing to cognitive decline or memory decline in aging, and most recently we've discovered, in Alzheimer's disease as well.

Now, I know this is remarkably depressing news. It's in the mail. It's coming at you. But there's a potential silver lining here. Unlike many of the other factors that we know are associated with aging, for example changes in the physical structure of the brain, that's fiendishly difficult to treat. But that sleep is a missing piece in the explanatory puzzle of aging and Alzheimer's is exciting because we may be able to do something about it.

And one way that we are approaching this at my sleep center is not by using sleeping pills, by the way. Unfortunately, they are blunt instruments that do not produce naturalistic sleep. Instead, we're actually developing a method based on this. It's called direct current brain stimulation. You insert a small amount of voltage into the brain, so small you typically don't feel it, but it has a measurable impact. Now if you apply this stimulation during sleep in young, healthy adults, as if you're sort of singing in time with those deep-sleep brainwaves, not only can you amplify the size of those deep-sleep brainwaves, but in doing so, we can almost double the amount of memory benefit that you get from sleep. The question now is whether we can translate this same affordable, potentially portable piece of technology into older adults and those with dementia. Can we restore back some healthy quality of deep sleep, and in doing so, can we salvage aspects of their learning and memory function? That is my real hope now. That's one of our moon-shot goals, as it were.

So that's an example of sleep for your brain, but sleep is just as essential for your body. We've already spoken about sleep loss and your reproductive system. Or I could tell you about sleep loss and your cardiovascular system, and that all it takes is one hour. Because there is a global experiment performed on 1.6 billion people across 70 countries twice a year, and it's called daylight saving time. Now, in the spring, when we lose one hour of sleep, we see a subsequent 24-percent increase in heart attacks that following day. In the autumn, when we gain an hour of sleep, we see a 21-percent reduction in heart attacks. Isn't that incredible? And you see exactly the same profile for car crashes, road traffic accidents, even suicide rates.

But as a deeper dive, I want to focus on this: sleep loss and your immune system. And here, I'll introduce these delightful blue elements in the image. They are called natural killer cells, and you can think of natural killer cells almost like the secret service agents of your immune system. They are very good at identifying dangerous, unwanted elements and eliminating them. In fact, what they're doing here is destroying a cancerous tumor mass. So what you wish for is a virile set of these immune assassins at all times, and tragically, that's what you don't have if you're not sleeping enough.

So here in this experiment, you're not going to have your sleep deprived for an entire night, you're simply going to have your sleep restricted to four hours for one single night, and then we're going to look to see what's the percent reduction in immune cell activity that you suffer. And it's not small -- it's not 10 percent, it's not 20 percent. There was a 70-percent drop in natural killer cell activity. That's a concerning state of immune deficiency, and you can perhaps understand why we're now finding significant links between short sleep duration and your risk for the development of numerous forms of cancer. Currently, that list includes cancer of the bowel, cancer of the prostate and cancer of the breast. In fact, the link between a lack of sleep and cancer is now so strong that the World Health Organization has classified any form of nighttime shift work as a probable carcinogen, because of a disruption of your sleep-wake rhythms.

So you may have heard of that old maxim that you can sleep when you're dead. Well, I'm being quite serious now -- it is mortally unwise advice. We know this from epidemiological studies across millions of individuals. There's a simple truth: the shorter your sleep, the shorter your life. Short sleep predicts all-cause mortality.

And if increasing your risk for the development of cancer or even Alzheimer's disease were not sufficiently disquieting, we have since discovered that a lack of sleep will even erode the very fabric of biological life itself, your DNA genetic code. So here in this study, they took a group of healthy adults and they limited them to six hours of sleep a night for one week, and then they measured the change in their gene activity profile relative to when those same individuals were getting a full eight hours of sleep a night. And there were two critical findings. First, a sizable and significant 711 genes were distorted in their activity, caused by a lack of sleep. The second result was that about half of those genes were actually increased in their activity. The other half were decreased.

Now those genes that were switched off by a lack of sleep were genes associated with your immune system, so once again, you can see that immune deficiency. In contrast, those genes that were actually upregulated or increased by way of a lack of sleep, were genes associated with the promotion of tumors, genes associated with long-term chronic inflammation within the body, and genes associated with stress, and, as a consequence, cardiovascular disease. There is simply no aspect of your wellness that can retreat at the sign of sleep deprivation and get away unscathed. It's rather like a broken water pipe in your home. Sleep loss will leak down into every nook and cranny of your physiology, even tampering with the very DNA nucleic alphabet that spells out your daily health narrative.

And at this point, you may be thinking, "Oh my goodness, how do I start to get better sleep? What are you tips for good sleep?" Well, beyond avoiding the damaging and harmful impact of alcohol and caffeine on sleep, and if you're struggling with sleep at night, avoiding naps during the day, I have two pieces of advice for you.

The first is regularity. Go to bed at the same time, wake up at the same time, no matter whether it's the weekday or the weekend. Regularity is king, and it will anchor your sleep and improve the quantity and the quality of that sleep. The second is keep it cool. Your body needs to drop its core temperature by about two to three degrees Fahrenheit to initiate sleep and then to stay asleep, and it's the reason you will always find it easier to fall asleep in a room that's too cold than too hot. So aim for a bedroom temperature of around 65 degrees, or about 18 degrees Celsius. That's going to be optimal for the sleep of most people.

And then finally, in taking a step back, then, what is the mission-critical statement here? Well, I think it may be this: sleep, unfortunately, is not an optional lifestyle luxury. Sleep is a nonnegotiable biological necessity. It is your life-support system, and it is Mother Nature's best effort yet at immortality. And the decimation of sleep throughout industrialized nations is having a catastrophic impact on our health, our wellness, even the safety and the education of our children. It's a silent sleep loss epidemic, and it's fast becoming one of the greatest public health challenges that we face in the 21st century.

I believe it is now time for us to reclaim our right to a full night of sleep, and without embarrassment or that unfortunate stigma of laziness. And in doing so, we can be reunited with the most powerful elixir of life, the Swiss Army knife of health, as it were.

And with that soapbox rant over, I will simply say, good night, good luck, and above all ... I do hope you sleep well.

Thank you very much indeed.

Listening Quiz

Matthew Walker: Why Is It Essential To Make Time For Sleep?

1)

a) It’s impossible to

b) Your brain is working to control your sleep consciously.

c) You have a choice whether to

2)

a) be overcome by doing appropriate training.

Insufficient sleep will b) cause disease and sickness.

c) be analyzed biologically.

3)

If you go to bed at 10 p.m., and wake up at 4 a.m., instead of 6 a.m.,

a) your brain and body need to cycle through both REM and non-REM sleep.

b) you can get a jump start in the early morning.

c) you may have lost 60, 70, 80% of all of your REM sleep.

4)

a) before

We need sleep b) after learning.

c) before and after

5)

a) sleep will calm your emotion.

It's better to go to bed angry because b) you can’t have an argument while sleeping.

c) sleep will give you sharp edges.

6)

a) Everything

b) Nothing will be improved by getting enough sleep.

c) Many things

Sloths! The strange life of the world's slowest mammal

**Sloths! The strange life of the world's slowest mammal | Lucy Cooke**

Hello. Well, I'm here to talk to you about my animal muse: the sloth.

I've been documenting the strange lives of the world's slowest mammal for the last 10 years. I still remember the first time I saw one. I was fascinated by their freaky biology. I mean, what's not to love about an animal that's born with a fixed grin on its face?

And the need to hug.

Audience: Awww.

But sloths are massively misunderstood. They've been saddled with a name that speaks of sin and damned for their languorous lifestyle, which people seem to think has no place amongst the fittest in the fast-paced race for survival. Well, I'm here to tell you that we've got this animal all wrong -- and how understanding the truth about the sloth may help save us and this planet we both call home.

I traced sloth-based slander back to a Spanish conquistador called Valdés, who gave the first description of a sloth in his encyclopedia of the New World. He said the sloth was "the stupidest animal that can be found in the world ... I have never seen such an ugly animal or one that is more useless."

Tell us what you really think, Valdés.

I'd like to have a word about Valdés's drawing skills.

I mean, what is that?

I've never seen an illustration of a sloth that's more useless.

But I mean, on the plus side, he has given the sloth a remarkably humanlike face, and sloths do have remarkably humanlike faces. This sloth I photographed in Costa Rica, I think looks a lot like Ringo Starr.

But then, sloths do bear an uncanny resemblance to the The Beatles.

Particularly pleased with Paul, actually, on there. But like The Beatles, sloths are also extremely successful. They come from an ancient line of mammals, and there were once dozens of species including the giant ground sloth, which was the size of a small elephant and one of the only animals big enough to eat avocado pits whole and disperse them.

So ... (Laughter)

Some of you have worked it out already.

That means that without sloths, there might be no avocado on toast today, leaving hipsters everywhere totally bereft at breakfast.

Today, there are six surviving species, and they fall into two groups. You've got your Bradypus three-toed sloths, they're the ones with the Beatles haircuts and the Mona Lisa smiles. Then, there are the two-toed sloths. They look a little bit more like a cross between a Wookiee and a pig. They live in the jungles of Central and South America, and they're extremely prolific. There was a survey that was done in the 1970s in a Panamanian tropical forest that found that sloths were the most numerically abundant large animal. They took up one quarter of the mammalian biomass. Now, that's an awful lot of sloths and suggests they're doing something very right indeed.

So what if, rather than deriding the sloth for being different, we tried to learn from it instead?

We humans are obsessed with speed. Busyness is a badge of honor, and convenience trumps quality in our quest for quick. Our addiction to the express life is choking us and the planet. We idolize animals like the cheetah, the "Ferrari of the animal kingdom," capable of doing naught to 60 in three seconds flat. Well, so what?

So what? The sloth, on the other hand, can reach a leisurely 17 feet a minute with the wind behind it.

But being fast is costly. The cheetah is speedy, but at the expense of strength. They can't risk getting in a fight, so they lose one in nine kills to tougher predators like hyenas. No wonder they're laughing.

The sloth, on the other hand, has taken a more stealthy approach to dinner. They survive by capturing and consuming static leaves.

But you see, leaves don't want to be eaten any more than antelope do, so they're loaded full of toxins and very hard to digest. So in order to consume them, the sloth has also had to become an athlete -- a digesting athlete.

The sloth's secret weapon is a four-chambered stomach and plenty of time. They have the slowest digestion rate of any mammal. And it can take up to a month to process a single leaf, which gives their liver plenty of time to process those toxins. So, sloths aren't lazy. No, they're busy. Digesting.

Yeah, really busy.

Hard at work, that sloth, very hard at work. And of course, leaves have little calorific value, so sloths have evolved to spend as little energy as possible. They do about 10 percent of the work of a similar-sized mammal and survive on as little as 100 calories a day, thanks to some ingenious adaptations. The Bradypus, three-toed sloths, they've got more neck bones than any other mammal, even a giraffe. Which means they can turn their head through 270 degrees and graze all around them, without having to actually bother with the effort of moving their body.

It also means that they are surprisingly good swimmers. Sloths can bob along in water three times faster than they can move on land, kept afloat by ... trapped wind.

So --

sloths are the only mammal that we know of that don't do flatulence. When they need to expel gas, it's actually reabsorbed into their bloodstream and expelled orally as a sort of mouth fart.

Turning their lives upside down saves further energy. They have about half the skeletal muscle of a terrestrial mammal. They don't really have so many of the extensor muscles that are the weight-bearing muscles; instead, they rely on retractor muscles to pull themselves along. They have long, hooked claws and a high fatigue resistance, so they can literally hook on and hang like a happy, hairy hammock for hours on end. And sloths can do almost anything in this inverted position. They sleep, eat and even give birth. Their throat and blood vessels are uniquely adapted to pump blood and to swallow food against the force of gravity. They have sticky bits on their ribs that prevent their enormous stomach from crushing their lungs. And their fur grows the opposite direction, so they can drip dry after a tropical drenching. The only problem is, if you turn a sloth the other way up, gravity removes its dignity.

They can't hold themselves upright. And so they drag their bodies along as if mountaineering on a flat surface. And I think this is why the early explorers like Valdés thought so poorly of them, because they were observing sloths the wrong way up and out of context.

I've spent many happy hours mesmerized by moving sloths. Their lack of muscle hasn't impeded their strength or agility. Nature's zen masters of mellow move like "Swan Lake" in slow mo --

with the core control of a tai chi master. This one has fallen asleep mid-move, which is not uncommon.

But you're probably wondering: How does a dangling bag of digesting leaves avoid being eaten? Good question. Well, this is one of the sloth's main predators. It's the harpy eagle. It can fly at speeds of up to 50 miles per hour, has talons the size of a grizzly bear's, razor-sharp eyesight, and that ring of feathers focuses sound so that it can hear the slightest leaf rustle. The sloth, on the other hand, has poor hearing, bad eyesight, and running from danger is clearly not an option. No, they survive by wearing an invisibility cloak worthy of Harry Potter.

Their fur has grooves that attract moisture and act as tiny hydroponic gardens for algae, and they also attract a host of invertebrates. So they are their own slow-moving, miniature ecosystem. They become one with the trees. And we think that their movements are so slow, they slip under the radar of the monstrous harpy as it's flying about the canopy, scanning for action.

Sloths are stealth ninjas, and they rarely leave the safety of the canopy -- except to defecate, which they do about once a week at the base of a tree. Now, this risky and energetic behavior has long been a mystery, and there are lots of theories as to why they do it. But I think they're leaving surreptitious scented messages for potential mates. Because, you see, sloths are generally silent, solitary creatures, except for when the female is in heat. She will climb to the top of a tree and scream for sex. In D-sharp.

Don't believe me?

D-sharp. This and only this note will get the male's attention. It mimics the sound of the kiskadee flycatcher. So the female remains covert, even when yodeling for sex at the top of her lungs. Her clandestine booty calls will carry for miles across the canopy, and males will beat a slow path towards her.

I think scented messages in her dung will help send Romeo up the right tree so that he doesn't waste precious energy scaling the wrong one. Sex, by the way, is the only thing that sloths do swiftly. I've seen them do it in the wild, and it's over and done with in a matter of seconds. But then, why waste precious energy on it, particularly after that journey?

Unlike other mammals, sloths don't also waste time maintaining a constant warm body temperature. Energy from the sun is free, so they bask in the sun like lizards and wear an unusually thick coat for the tropics to keep that heat in. Sloths have a freakishly low metabolism. And we think that this might be one of the reasons that they can sometimes recover from injuries that would kill most animals. This sloth recovered from a double amputation, and I've known sloths that have managed to survive even power line electrocutions. And we now think that a low metabolism may well be key to surviving extinction. Researchers at Kansas University who were studying mollusks found that a high metabolism predicted which species of mollusk had gone extinct.

Sloths have been around on this planet in one shape or another for over 40 million years. The secret to their success is their slothful nature. They are energy-saving icons. And I founded the Sloth Appreciation Society to both promote and protect their slow, steady, sustainable lives. I'm a pretty speedy character. I'm sure you've guessed. And the sloths have taught me a lot about slowing down. And I think that the planet would benefit if we all took a slowly digested leaf out of their book.

How about we all embrace our inner sloth by slowing down, being more mindful, reducing wasteful convenience, being economical with our energy, recycling creatively and reconnecting with nature. Otherwise, I fear, it will be us humans that turn out to be "the stupidest animals that can be found in the world."

Thank you very much.

May the sloth be with you!

QR コード

自動的に生成された説明Listening Quiz

問題を読んでから音声を聞く。

1) Lucy Cooke saw a sloth in person for the first time

a) in order to write about endangered amphibians.

b) when she visited a sanctuary in Costa Rica.

c) , which was moving very slowly like a ballet dancer.

2) The two different types of sloth Lucy Cooke mentioned

a) both have medieval haircuts and Mona Lisa smiles.

b) are genetically quite different.

c) live most of their lives in a huge group.

3) Lucy says the secret to their survival is

a) that they're loaded full of toxins

b) having over 50 species.

c) a freakishly low metabolism.

4) Sloths save a lot of energy

a) by hanging from trees.

b) by sleeping on a hammock.

c) by going against gravity.

5) Sloths come down to the ground

a) to become completely vulnerable.

b) to send love messages to other sloths.

c) to save a lot of energy for sex.

6) The only thing that sloths do quickly is

a) sex.

b) scream.

c) escape.

7) Sloths escape from being eaten by

a) running away from the enemy.

b) being totally camouflaged.

c) making a sharp sound.

8) Nowadays, the sloth is a symbol of

a) idleness and laziness.

b) a sustainable lifestyle.

c) lovable sinners.

QR コード

自動的に生成された説明

**The dream of educating Afghan girls lives on | TED Talk**

Nine years ago, I stood on a stage a lot like this one. It was at the TEDWomen conference in Washington, DC, back in 2012. I was 22 years old, a woman with a college degree. That's nothing too exceptional to say here in the United States. In Afghanistan, my homeland, women like me were the exception.

It had been a little over a decade since the fall of the Taliban regime. A time when it was quite literally illegal for girls to go to school. The Afghan people had spent a decade rebuilding our nation and our lives. And when I stood on the TEDWomen stage, I challenged the world to dare to educate Afghan girls. The way I had just started doing at a place in Kabul called the School of Leadership, Afghanistan, or SOLA.

(Video) [To] me, Afghanistan is a country of hope and boundless possibilities. And every single day, the girls of SOLA remind me of that. Like me, they are dreaming big.

That was then.

And this is now. And the Taliban are back.

But I want you to know I haven't stopped dreaming. Neither have those girls of SOLA. We have taken our dreams and adapted them. Agility, adaptation, resilience. These concepts are core to everything that SOLA is. We have faced the uncertainty of what might be, and we have turned it into the certainty of what will be. I'll explain.

Back in 2012, we ran a program where girls lived at SOLA but primarily studied at high schools in Kabul. And we secured scholarships for these girls to pursue their education overseas, including here in America. It worked. It worked well. But I realized I was contributing to something I never wanted to see: a brain drain of Afghanistan’s educated women. So I realized I had to adapt. I wanted to educate Afghan girls who would become educated Afghan women, who would then educate other girls. And all of them together over time would build a new Afghanistan from the bottom up, and they would be among its leaders. I needed a place where these girls would learn to read English and Koran. I needed a place where the administration and instructors would be women. A place where the notion of female leadership -- Afghan female leadership -- would become known for every student. I needed a place that quite simply did not exist in Afghanistan.

So my team and I created it. In 2016, SOLA became a full-fledged boarding school for girls. The first and only in Afghanistan.

That year, we enrolled 24 girls in sixth grade. By 2021, we had enrolled nearly 100 girls in grades six to 11. I'll tell you something I'm very proud of. In 2016, we drew girls from 14 of Afghanistan's 34 provinces. This year, we have girls from 28 provinces.

Imagine you are a girl from one of these provinces coming to SOLA. You've probably never lived away from your family. As you can see, we have obscured their faces for their safety. But when you arrive on campus, an older sister will be there for you. She will be beside you as you pray in the campus mosque; she will eat with you; she will help you with your schoolwork. You are from different provinces, different ethnicities, but you are united by sisterhood. By your identity as Afghan girls.

Educating girls, breaking barriers, this is what we do at SOLA. We became known for this nationwide. Parents came to us from across Afghanistan asking us to admit their daughters.

I remember one father in particular, from a rural province, and one of his daughters was already a student with us. This was back in 2019, and I remember him coming to campus and sitting in my office. He was trying to convince me to admit another one of his daughters. On his way out, he stopped in the doorway, turned around and looked at me, and completely calmly, he said, "When the Taliban come back, please promise that you will burn my daughter's records. If the Taliban know my daughter studies here, they will kill my family." Remember, this was 2019. Two years ago. He didn't say "if the Taliban come back." He said "when." I promised him that I would do what he asked. And this summer ... I did.

What you're seeing here are the records of my students burning. We set this fire to protect every girl who's ever studied at SOLA. This was mid-August. Right as the Taliban were about to enter Kabul. Less than two weeks later, nearly 250 members of the SOLA community, students, staff and family members, were out of Afghanistan and safe in the nation of Rwanda.

I will say this again. When you face the uncertainty of what might be, you can turn it into the certainty of what will be.

SOLA's departure from Afghanistan made headlines. And I think it has drawn the attention partly because how swiftly the Taliban took over Afghanistan and how quickly so much of what was beautiful about my country turned to dust. But what these stories don't usually tell you is that we had been quietly planning for this day of our departure for most of the year. I had that conversation with my student's father in December 2019. The United States signed an agreement with the Taliban in February 2020. And the US announced its unconditional withdrawal from Afghanistan in April 2021. These dates were like signposts on a road I never wanted to be on. I couldn't see far enough down that road to be certain about it's end. But what I was certain of was that I would not sit passively by and let that road lead me.

This spring, we started making plans to bring our students overseas for a study abroad program. This takes time. We needed to identify potential host nations; we needed parents to grant permission; we needed to speak with officials and gather our resources. It takes time, and all the while you're moving down that road, going faster, gaining momentum toward what lies at the end. There is a lot about this that I still cannot talk about. Some of it is for security reasons. And some of it is for personal reasons. This is still very raw for me.

I never imagined Afghanistan would fall as fast as it did. No one imagined it. But I will tell you this. On August 1, we were bringing our students back to Kabul after their semester break. On August 15, the Taliban were in Kabul and in control. And on August 30, we were holding our second day of classes at our new campus in Rwanda with our entire community together and safe.

That is how fast things can move. And that's what anyone, not just me, but anyone can accomplish when you accept the uncertainty of what might be, and through careful contingency planning, turn it into the certainty of what will be. You will find yourself somewhere new. And different. Adapting and succeeding. And sometimes, you will know you have left a light on to help you find your way home.

What you're seeing here is something that I very rarely show publicly. Earlier, I talked about SOLA's campus in Kabul. That campus is a series of rented buildings that we have converted into classroom and residential space. But what you're seeing here is something very different. This is a perimeter wall that rings a parcel of land in the heart of Kabul city, land that SOLA holds legal rights to. This is the land where we're going to build a permanent campus, where Afghan girls will come to live and study in safety. We cleared this land ourselves, all 18,000 cubic meters of landfill. We raised this wall ourselves. We knew we would face opposition, and we planned for it. We spoke with our neighbors, explaining how valuable an educated girl is to her family, explaining how one day their daughters could apply to study at SOLA. And our neighbors became some of our strongest allies. We spoke with high-level government officials who complained that this land was too valuable to be wasted on educating girls. And we convinced them otherwise. Those officials, of course, aren't in government anymore. Afghanistan has new leaders. And while this is a sensitive topic, I can say that it's quite possible that construction on this new campus might resume relatively soon. Time will tell.

Nine years ago, I stood on a TEDWomen stage, and I said Afghanistan is a country of hope and boundless possibilities. And every single day, the girls of SOLA remind me of that. Like me, they are dreaming big.

Earlier this year, I was on SOLA's campus in Kabul interviewing a girl who was applying for sixth grade. I asked her why she wanted to come to SOLA, which is a question I ask all our applicants. She said, "I have dreamed of this. I've dreamed of coming to SOLA ever since I was a little girl." In all these years that I have interviewed girls from across Afghanistan, this was the first time that a young girl said that to me. Why do I keep doing what I do, despite the risk that comes with it and all the uncertainty? Because Afghanistan is a country of hope and dreams. It's my home. And it always will be. And now, out there in the most remote corners of Afghanistan, are young girls, dreaming to attend SOLA.

My community, my students are settling and thriving in Rwanda. And I'm so grateful we're there. I see Afghanistan now through TV news reports or on my phone, when friends, still in Afghanistan, call me. But SOLA is there too. We have planted roots that can never be destroyed.

Nine years ago, I challenged the world to dare to educate Afghan girls. Those girls are young women now. And they will do what Afghan women have always done. Meet uncertainty head on and rise above it. I know they will do their part. But they, we need something from you, all of you here and watching this.

So today I issue another challenge to the world. Do not look away. As the noise dies down, and Afghanistan slips from the front pages, do not look away.

In nine years, it will be the year 2030. It's the year I will celebrate my 40th birthday. So here is my dream, my birthday wish. In nine years, I hope to be speaking with you again from SOLA’s campus in Kabul, with all of my students there. I will see you then, if you do not look away.

Thank you.

Listening Quiz

問題を読んでから音声を聞く。

1) Shabana grew up in Afghanistan

a) when educating girls was illegal.

b) going to all-girls boarding school.

c) with the presence of the U.S. troops.

2) When Kabul fell to the control of Taliban,

a) her students went home.

b) some of her students were killed by Taliban.

c) she helped her students get out of Afghanistan.

3) Through SOLA, she wants her students

a) to work in the U.S. in the future.

b) to become leaders in Afghanistan.

c) to study in high schools in Kabul.

4) She has included the word “Leadership” in the name of her school because

a) many of her students don’t want to be leaders in Afghanistan.

b) she wants her students to think about the meaning of leadership.

c) she wants her students to be leaders in the future.

5) a) sisterhood

She says b) a refugee community is a very important aspect of the experience at her school.

c) homeland

6) a) believes

She b) doesn’t think she will be able to start her school in Afghanistan again.

c) doesn’t know if



7) a) have completely silenced

She says the Taliban b) simply can’t silence Afghan women.

c) don’t want to silence

**'Smart gun' innovators seek to reduce firearm deaths**

Ginger Chandler had a hunch. She'd spent years developing products for major gun manufacturers Smith & Wesson and Remington, so gun safety was a big topic at home. But when her stepfather passed away, she worried that her own gun-savvy mom didn't store his gun properly — the type of common mistake that causes scores of accidental deaths in the U.S. each year. When they went to check on the gun, there it sat in an unlocked drawer with the ammo next to it.

"I said, 'Mom, we talk about this all the time. If you didn't know, there are so many people who don't know,'" Chandler recalled.

This anecdote is part of what motivated Chandler to join the startup LodeStar Works as it develops a "smart gun" that features three options so that it can be unlocked only by its registered owner. This type of technology could help prevent accidental firearm deaths, suicides or homicides by unauthorized users. But it's not gun control, and it also would not prevent a mass shooting perpetrated by someone who legally purchased the weapon used.

"In the United States, there are a lot of firearms out there, and people are just unaware that their own firearms aren't safe. Everybody's kind of going, 'Oh, that guy's stuff is not safe but mine's good,'" Chandler said.

The LS9, a 9 mm pistol that Chandler and her team hope to bring to market next year, uses biometrics so that the owner's thumbprint can unlock the weapon, as well as a PIN pad and a Bluetooth connection that works with a mobile app.

Gun violence is one of the most confounding and intractable problems in the United States. Every day, over 100 people die from gunshots — part of the more than 300 individuals who are shot each day, according to the Brady Campaign to Prevent Gun Violence. But the right to own guns is enshrined in the U.S. Constitution, and the issue has torn at America's social fabric.

While not explicitly opposed to smart guns, the National Rifle Association has raised concerns that if these firearms become commercially viable, the technology could become mandatory for all guns sold in the United States. In fact, President Biden's own campaign platform called for all firearms sold nationwide to be smart guns. And a recent NPR/Ipsos survey found that most American gun owners support moderate gun control measures such as background checks or increased age requirements.

But the last time a smart gun was available in the U.S., it failed miserably. In 2014, hackers broke into the radio-frequency identification (RFID) of German manufacturer Armatix's product, and magnets could also disable the locking mechanism.

Chandler is determined to get it right this time. At the next level of testing, when the prototypes will be tooled up, LodeStar Works plans to enroll the help of hackers to identify any potential weaknesses and resolve them. Additionally, the profile of the typical gun buyer has changed significantly, which could help improve the viability of a product like the LS9 on the market. Last year, in the midst of the COVID-19 pandemic, about half of new gun owners were women, and nearly half were people of color.

"They want to own their own destiny. But they also have small children at home. ... Maybe they're working remotely with their older children," Chandler explained. "They don't want to just have firearms out, but they also want to be in control."

Margot Hirsch has provided support to innovators like Chandler through her Smart Tech Challenges Foundation for the better part of a decade. In 2014, the foundation provided a total of $1 million in grants to 15 gun safety innovators.

"Breaking ground in a very traditional industry continues to be hard," Hirsch said. "The firearm industry is not one to innovate. My sense is they'll only do it when they're forced to do it. And so it takes really brave innovators to forge a path in this area."

Firearm-related injuries are now the leading cause of death among children and adolescents from age 1 to 19, according to expert analysis of data from the Centers for Disease Control and Prevention. And that's where Hirsch says smart guns could play an important role in reducing deaths.

"Mass shootings, as horrific as they are — and they obviously dominate the news — they account for less than 2% of the injuries and deaths due to guns," she said. "Although a smart gun might not prevent a mass shooting, they could definitely be used to address youth suicides."

At the same time, it's unlikely that traditional guns would get traded in for smart guns, which aren't even sold yet.

"We do believe that gun owners, when they go to buy new guns, will consider these guns for multiple reasons, and one is for personal protection," Hirsch explained. "This could be the gun that is readily available, let's say, on the bedside table, in the kitchen, wherever, where it's secured and locked and their children can't access it. But they know that if someone broke in their house or tried to take their weapon from them, it could not be used in that type of scenario."

Anti-gun violence activists note that introducing smart guns is also adding to the number of weapons available, but Hirsch stresses that firearms are going to remain available "for the foreseeable future."

"So, if people are going to continue to buy guns, we believe it is imperative that there is a smart gun option on the market. I do think it's imminent," she said.

Listening Quiz

問題を読んでから音声を聞くこと。



1) a. Some innovators

b. Only the registered owner can unlock the smart gun.

c. Anyone

2)

a) make sure

In the United States, people b) don’t believe that their own firearms aren't safe.

c) don’t know

3) Last year, in the midst of the pandemic, about half of all new gun owners were

a) women.

b) from a traditional industry.

c) under control.

4) The firearm industry is not happy because

a) they don’t want the new technology to be mandatory.

b) they don’t want to sell guns to women.

c) many people support moderate gun control.

5) a) almost half

Mass shootings account for b) more than half of gun-related deaths.

c) a small percentage

6) When smart guns are available on the market,

a) very few people will be likely to buy one.

b) they can solve America's gun violence epidemic

c) some people will be interested in buying one.

