



## How do Lie Detectors Work?

### 测谎仪的原理是什么？

Date: Dec. 27, 2022

We all lie. Some might argue it's human nature. In a 2002 study, 60% of people were found to lie at least once during a 10-minute conversation, with most people telling an average of two or three lies. Some lies are small, some are bigger, some are done **out of** kindness, and some done out of **malice**. But a lie is a lie, and the way that your body reacts when you lie is the same.

我们都会撒谎。有些人可能会说这是人性使然。2002 年的一项研究发现，60%的人在 10 分钟的谈话中至少会说一次谎，大多数人平均会说两到三次谎。有些谎言很小，有些则很大；有些出于善意，有些则出于恶意。但谎言就是谎言，你说谎时身体的反应都是一样的。

When you **engage in** a false **narrative** (or a lie), your **respiratory** and heart rate will increase and you may even start to sweat. While people may **vary** in the ability to tell a lie, most of the time your body will react in this same way. Exceptions to this rule are, for example, **psychopaths**, who lack empathy and therefore do not exhibit the typical physiological stress responses when telling a lie.

当你在说假话（或说谎）时，你的呼吸和心率会加快，甚至可能开始出汗。虽然人们说谎的能力各不相同，但大多数时候你的身体都会以同样的方式做出反应。这条规则的例外是，例如，精神病患者，他们缺乏同理心，因此在说谎时不会表现出典型的生理应激反应。

Lying generally involves more effort than telling the truth, and because of this, it involves the **prefrontal cortex**. A 2001 study by late neuroscientist Sean Spence explored **fMRI** images of the brain while lying. Participants answered questions about

490 Words

**out of** 出于，由于 | I asked out of curiosity. 我因为好奇问了问。

**malice** ['mælis] *n.* 恶意，怨恨 | He sent the letter out of malice. 他出于恶意寄出了这封信。

**engage in** 从事，参加 | Even in prison, he continued to engage in criminal activities. 他甚至在监狱里还继续从事犯罪活动。

**narrative** ['nærətɪv] *n.* 描述，叙述 | The novel contains too much dialogue and not enough narrative. 这部小说对话过多，而叙述不足。

**respiratory** ['respəreɪtɔ:ri] *adj.* 呼吸的 | the respiratory system 呼吸系统

**vary** ['væri] *v.* 不同，有别；变化，改变 | Fees vary with the size of the job. 费用将根据工作量的大小而变化。

**psychopath** ['saɪkəpæθ] *n.* 精神病患者，精神变态者

**prefrontal** [pri'frʌntəl] *adj.* 额叶前部的，前额的

**cortex** ['kɔ:rtɛks] *n.* 皮质，大脑皮层

**fMRI** (=functional magnetic resonance imaging) 功能性核磁共振成像

their daily routine by pressing a yes or no button on a screen. The results showed participants needed more time to **formulate** a dishonest answer than an honest one, and certain parts of the prefrontal cortex were more active when they were lying.

说谎通常比说实话需要花更多气力，正因为如此，说谎会动用前额叶皮层。已故神经科学家肖恩·斯宾塞在2001年的一项研究中探究了说谎时大脑的功能磁共振成像图。参与者通过按屏幕上的“是”或“否”按钮来回答有关他们日常生活的问题。结果显示，参与者需要更多的时间来编造一个不诚实的答案，而不是一个诚实的答案，并且当他们撒谎时，前额叶皮层的某些部分更加活跃。

Further research explains that three main areas of the brain are stimulated during **deception** – the **frontal lobe** works to suppress the truth, the **limbic system** activates due to the anxiety that comes from lying, and the **temporal lobe** activates in response to **retrieving** memories and creating mental imagery (**fabricating** a believable lie).

进一步的研究表明，在欺骗过程中，大脑的三个主要区域会受到刺激——额叶会抑制真相，边缘系统会因为撒谎带来的焦虑而激活，颞叶会因为恢复记忆和创造心理意象（编造一个可信的谎言）而激活。

In 1921, a California-based police officer and physiologist John A. Larson created an **apparatus** that simultaneously measures continuous changes in blood pressure, heart rate, and respiration rate to aid in the **detection** of deception. This was the invention of the **polygraph**, which is commonly referred to as a lie detector.

1921年，加州的一名警察兼生理学家约翰·A·拉尔森发明了一种仪器，可以同时测量血压、心率和呼吸频率的连续变化，以帮助发现欺骗。这就是多导生理记录仪的发明，其通常被称为测谎仪。

The accuracy of polygraph tests has been **called into question** for nearly as long as they've existed. These machines detect typical stress responses to telling a lie. This means increased heart rate, blood pressure, and **respiration** rate. Some

**formulate** ['fɔ:rmjuleɪt] v. 构想，准备；确切表达，认真阐述 | Darwin formulated the theory of natural selection. 达尔文创立了自然选择学说。

**deception** [di'sepʃn] n. 欺骗，蒙骗；骗术，骗局 | He was accused of obtaining property by deception. 他被指控骗取钱财。

**frontal lobe** 额叶（与行为、学习和个性有关）

**limbic system** （大脑）边缘系统（调节内脏活动，影响情绪）

**temporal lobe** 颞叶（负责处理听觉信息，也与记忆和情感有关）

**retrieve** [rɪ'tri:v] v. （计算机、大脑）检索，搜索（信息）；取回 | She bent to retrieve her comb from the floor. 她弯腰从地上捡起她的梳子。

**fabricate** ['fæbrɪkeɪt] v. 编造，捏造；制造，装配 | The evidence was totally fabricated. 这个证据纯属伪造。

**apparatus** [ə'pə'ræʃəs] n. 仪器，器械，装置；机构，组织，机关 | They were setting up the apparatus for the experiment. 他们正在安装实验用的设备。

**detection** [di'tekʃn] n. 探测，察觉，发现 | Early detection of cancers is vitally important. 癌症的早期查出是极为重要的。

**polygraph** ['pɔ:lɪgræf] n. 多导（生理）记录仪

people are naturally good liars, or become better with controlling these stress responses, and can manage to stay calm during a lie detector test.

自测谎仪问世以来，其准确性一直备受质疑。这些机器能检测出说谎时的典型应激反应，即心率、血压和呼吸频率增加。有些人天生擅长撒谎，或者能很好地控制这些应激反应，在测谎仪测试中能够保持冷静。

According to the American Polygraph Association (made up largely of polygraph examiners), the estimated accuracy of a polygraph can be **up to** 87%. That means that in 87 out of 100 cases, the polygraph will be able to detect if someone is telling the truth.

据美国测谎仪协会（主要由测谎仪审查员组成）称，测谎仪的估计准确度可达 87%。这意味着在 100 个案例中，测谎仪能够检测出某人是否在说真话的有 87 个。

If the person lies but doesn't have the stress symptoms of telling that lie, they will pass the test. Similarly, **innocent** people may fail the test due to being anxious about taking it to begin with and therefore emitting the **elevated** heart, respiratory, and blood pressure rates that can be detected.

如果这个人说了谎，但没有表现出说谎的应激症状，他们就会通过测试。同样，无辜的人可能会因为一开始就对测试感到焦虑，因此被检出心脏、呼吸和血压频率升高，从而无法通过测试。

**call sth. into question** 对某事产生疑问 | I feel that my competence is being called into question here. 我觉得我的能力此刻受到了怀疑。

**respiration** [ˌrespə'reɪʃn] *n.* 呼吸 | His respiration grew fainter throughout the day. 一天当中，他的呼吸越来越微弱。

**up to** （数量或数目）多达，至多；直到（某个时刻或日期）；达到某个标准 | The Olympic Stadium will hold up to 80,000 spectators. 奥林匹克体育场将可容纳多达八万名观众。

**innocent** ['ɪnəsnt] *adj.* 无辜的，清白的，无罪的；天真无邪的 | Under the law, everyone is considered innocent until proved guilty. 根据法律，所有人在证实有罪前都被认为是清白的。

**elevated** ['elɪvətɪd] *adj.* 高的，升高的；高贵的；高尚的 | The house is in an elevated position, overlooking the town. 这栋房子地势较高，可以俯瞰全镇。

## ➤ 脉络梳理

- Para. 1-4      介绍说谎时典型的生理反应
- Para. 5          介绍测谎仪的发明及其原理
- Para. 6-8      分析测谎仪的准确性，指出测谎仪并不完全可靠

## ➤ 长难句拆解

主语+谓语

Further research explains

宾语从句，作 explains 的宾语

that three main areas of the brain are stimulated during deception

破折号后的内容解释说明主句

- the frontal lobe works to suppress the truth,

原因状语

定语从句，修饰 anxiety

the limbic system activates due to the anxiety that comes from lying,

目的状语

and the temporal lobe activates in response to retrieving memories and creating mental

imagery (fabricating a believable lie).