SCIENCE

I Cannot Tell a Lie

WHAT PEOPLE WITH AUTISM CAN TELL US ABOUT HONESTY

By Simon Baron-Cohen

In moral terms, honesty is without doubt a virtue, and dishonesty is a vice. But in social terms, absolute honesty can lead to trouble, risking causing offense to others who may not want or need to hear the complete truth. White lies may be desirable. And in biological terms, dishonesty is a sign of typical brain development, whereas someone who is incapable of dishonesty may be neurologically atypical. Dishonesty is one defining characteristic of what it is to be human. It is not the only defining characteristic, but it does separate us from other animals. Some nonhuman species may have a limited capacity for deception, but humans have a flexible, unlimited capacity for deception. And since anything that is uniquely human is likely to be part of our genetic makeup, it stands to reason that we are, in a sense, built for dishonesty — and those incapable of dishonesty, like people with autism, have a uniquely human disability. Beyond having deficits in social interaction, they live with a different relationship to morality. Their experience is a unique window into the typical human mind.

We'll return to this point in just a moment. But before we can see what honesty means for being human, and what we can learn about it from autism, we need to take an unexpected detour and examine first what other species can and can't do when it comes to deception. To understand how humans lie, it profits us to begin by looking at monkeys.

Consider, for example, the reports of how one monkey will wait until a second monkey (who is watching him) is not around before approaching a food source. Some interpret this as the first monkey trying to ensure that the observer does not discover the food source. Critics call this the "rich" interpretation. The "lean" interpretation is that the first monkey has simply learned that if he waits until no other animals are around before going to the food source, he will get more food. In this interpretation, there is no need to attribute to the first monkey any capacity to deceive. They are simply able to learn the rule that *eating alone = more food.*

Or consider the examples of animals who hunt in silence. Imagine the lioness who lies in wait in the long grass, silently watching a wildebeest who has not yet spotted her. The lioness waits for her moment, remaining as still and as invisible as possible, until she sees her split-second opportunity and lunges, as if out of nowhere, to successfully seize and kill her prey. Some interpret this as the lioness trying to ensure that the wildebeest does not discover she is there, so that he will believe he is safe and not run away. Again, critics call this the rich interpretation. The lean interpretation is that the lioness has learned that

hunting in silence results in a kill, while making a noise results in the prey getting away. In this lean interpretation, there is no need to attribute to the lioness any capacity to deceive. She is simply able to learn the rule that *hunting in silence = more food*. An even leaner interpretation might be that silent stalking is in the lioness's genes – that it does not even require learning. The lioness just does this because she inherited genes that produce this behavior, much as a spider spins webs. Such genes have been passed on precisely because they lead to more food and therefore better chances of survival.

How do we decide if the rich or the lean interpretation is correct or better? Among scientists, good practice dictates that a lean interpretation, where possible, is preferable over a rich one, since lean interpretations are more parsimonious. In science, we want to explain events with the fewest number of factors; the aim is to avoid a proliferation of unnecessary factors. Explaining monkeys' or lionesses' behavior in terms of rule-learning is more parsimonious than explaining it by attributing to them the capacity for deception. This is because we already know they can learn rules. So why invoke an extra capacity when an existing one will do?

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one would think about fiction or pretense. They have no difficulty with facts (version 1 of reality) and can tell you easily if something is true or false ("Is the moon made of rocks? Yes! Is the moon made of cheese? No!"). But they may be puzzled by version 2 of reality, that "John believes the moon is made of cheese." Why would a person believe something that is untrue?

They have major difficulties grasping that another person might hold a false belief that *to that person* is true. A large body of experimental research shows that while the typical child achieves this understanding easily by four years old, children with autism are to varying degrees delayed in this area of development. As a result, they show some degree of "mindblindness." Even the higher-functioning children on the autistic spectrum, such as those with Asperger's syndrome, show delays in the development of mind-reading ability. This neurological (and ultimately genetic) set of conditions can leave the person with autism or Asperger's syndrome prey to deception and exploitation.

This lack of "street smarts" boils down to not being aware that other people may say one thing but mean another. For the child with autism, there is only one version of reality.

Take the boy with Asperger's syndrome in the playground at school who was approached by a group of other boys, one of whom asked, "Can I have a look your wallet?" Innocently, the boy handed it over, and was shocked when the other boy ran off with it. This lack of "street smarts" boils down to not being aware that other people may say one thing but mean another. For the child with autism, there is only one version of reality. The other version (the world of beliefs and intentions) may be one he rarely glimpses, or grasps too slowly, too late. This tells us something very important: that the skills you need to survive and negotiate the social world involve mind-reading and meta-representation – and that the capacity to deceive is a marker that a child is developing typical social skills.

When I was a young Ph.D. student, I tested children using the "penny-hiding game." This is the age-old game where you sit opposite the child and show him you have a penny. You then put your hands behind your back, conceal the penny in one of your hands, and then bring your two closed hands in front of your body to invite the child to guess which hand the penny is in. Obviously he has a 50/50 chance of choosing the correct hand. You then repeat this, varying which hand you hide the penny in. To trick the child, your best strategy is to be unpredictable, rather than always hiding it in the same hand. Most children find this game lots of fun. But to test whether he himself can deceive, you then swap roles. Now he is the hider and you are the seeker. The question is: how good is he at trying to trick you?

Playing this game with a typical child over four years old soon reveals that this is – literally – child's play. He realizes that in the role of hider he needs to do three things: (1) conceal the penny only when his hands are behind his back;

(2) keep both hands tightly shut when inviting you to choose; and (3) over a series of trials, hide the penny in a sequence that is hard to predict. But playing this game with a child with classic autism – even if he is older than four – soon reveals major difficulties. The child with autism typically makes one of three kinds of error: transferring the penny from one hand to another in full view of you, in front of his body; keeping one hand open when inviting you to guess which hand the penny is in; or hiding the penny in an easy-to-predict pattern (such as in the same hand each time, or just alternating). The first two of these errors suggest he is not keeping track of what you might know, based on what you can see. He is just not keeping track of another person's beliefs.

As such, children with autism make very poor liars. Like the typical two-year-old boy who says, "I didn't eat the chocolate cookies," but who has chocolate smeared all over his face and fingers, or like the two-year-old girl who plays hide-and-seek by standing in the middle of the room with her eyes shut and saying, "You can't see me!," the child with autism is very poor at telling lies. But whereas the two-year-old child is well on the way to developing a capacity for deception (spontaneously playing peekaboo because she is interested in what other people can see), the child with autism finds very little pleasure in playing such mind games.

Far more satisfying for a child with autism is a game rooted in version 1 of reality, the version he does understand, the world of physical objects. Lego bricks, which can be built into pleasing patterns and constructions, and which can be assembled and disassembled in the same predictable way each time, or can be varied in a logical, systematic, rule-governed way, are far more attractive

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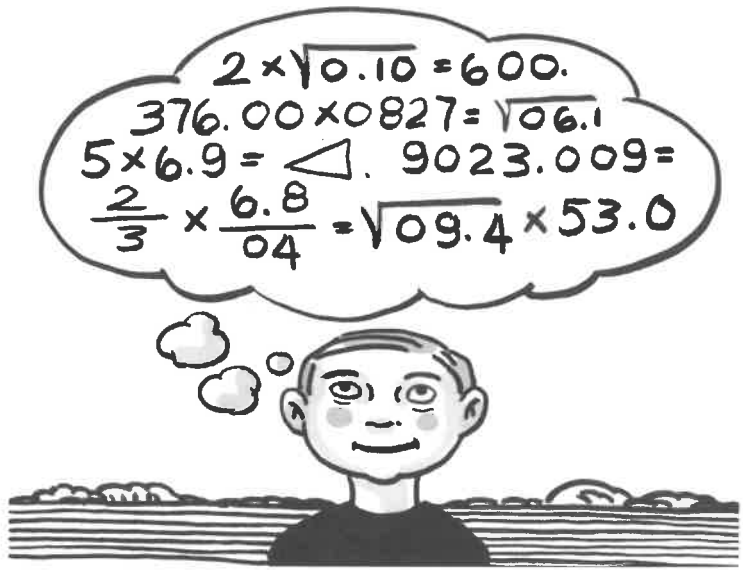
than a game of deception. Hence a neurological disability that leaves the child challenged in fast-changing social situations also leaves him or her more virtuous, more truthful, less deceitful. The person with autism or Asperger's syndrome may say that your haircut is awful, and this may be true. He means no offense in such a personal remark. He is simply saying what he thinks, and don't see the purpose of saying the opposite of what he thinks.

And even after twenty-five years in the field of autism, I am still shocked. A Ph.D. student with Asperger's syndrome said to me last week, "I've just discovered that people don't always say what they mean. So how do you know how to trust language?" Her "discovery" at the age of twenty-seven is one that the typical child makes at age four, in the teasing interactions of the playground.



BRAIN-SCANNING STUDIES REVEAL THAT ONE KEY BRAIN REGION typically involved in mind-reading is the left medial prefrontal cortex. This brain region is underactive in people with autism and Asperger's syndrome. Since these conditions to some extent run in families, genes will partly determine whether a person finds mind-reading easy or hard. I say "partly" because autism is not wholly genetic. Environmental experience is also important, but it appears to interact with genetic makeup. And if mind-reading is in part genetically programmed, it means it is the result of our evolution, since the processes shaping evolution (such as natural selection and sexual selection) act by enabling animals to survive to the age of reproduction, find a mate, and pass on their genes. It has been speculated that the first hominids who could mind-read would have had major advantages over those who could

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not – by deceiving and outwitting them, by being able to create shared plans and collaborate, by being able to teach each other, by being able to see other perspectives and negotiate to avoid conflict, or by being able to mind-read their offspring to anticipate their needs and thus provide better parenting.

So does this mean that people with autism or Asperger's syndrome are somehow less evolved? Not at all. What appears to have happened in human evolution is that the brain has developed down more than one path. The "neurotypical" brain has been selected for its capacity to socialize and chat with ease, keeping track of the rapidly changing social world, different points of view, innuendo, hidden meanings, exchanges of glances, and exploitation. The autistic brain, on the other hand, has been selected for its capacity to focus on the physical world in greater depth than is typical, noticing small details that others miss (such as patterns in numbers or shapes) and attending to highly specific topics in order to understand them completely.

Pejoratively, clinicians describe the deep, narrow interests in autism as "obsessions," but a more positive description might be "areas of expertise." Sometimes the area of expertise a person with autism focuses on appears not to be very useful (e.g., geometric shapes, or the texture of different woods). Sometimes the area of expertise is slightly more useful, though of limited interest to others (e.g., train timetables, or flags of the world). But sometimes the area of expertise can make a real social contribution (such as fixing machines, or solving mathematical problems, or debugging computer software).

It is not that the neurotypical brain or the autistic brain is more evolved than the other: it is simply that each has evolved in a different direction, one to empathize successfully, the other to systemize successfully.

It is not that the neurotypical brain or the autistic brain is more evolved than the other: each has evolved differently, one to empathize and master the social climate, the other to systemize successfully so as to master the physical niche. The unique qualities of human intelligence are characterized not just by the capacity for mind-reading (and deception), which has enabled humans to work in coordinated activity unusually well, but also by the capacity to systemize, which has enabled humans to understand how things work, and to develop innovative technology par excellence. People with autism, who can perceive patterns better and concentrate better than their peers, are also more honest. Rather than regarding autism as a "disease," we should recognize it as a difference that deserves our respect. Some features of it, like a learning or language disability, may benefit from treatment. But other features, like remarkable attention to detail and utmost honesty, are valuable human qualities. ♣

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