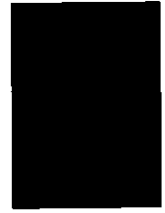


(we're only human)

Extraordinary Perception

We think of people with autism as having a deficit in cognitive processing—but their distractibility could also result from having enhanced perceptual capabilities

BY WRAY HERBERT



Most people do not pay much attention to the intricate details of highway intersections, but such minutiae may be noticed and remembered by people with autism or Asperger's syndrome.

WHEN Pulitzer Prize-winning music critic Tim Page was in second grade, he and his classmates went on a field trip to Boston. He later wrote about the experience as a class assignment, and what follows is an excerpt:

“Well, we went to Boston, Massachusetts, through the town of Warrenville, Connecticut, on Route 44A. It was very pretty, and there was a church that reminded me of pictures of Russia from our book that is published by Time-Life. We arrived in Boston at 9:17. At 11 we went on a big tour of Boston on Gray Line 43,

made by the Superior Bus Company like School Bus Six, which goes down Hunting Lodge Road where Maria lives and then on to Separatist Road and then to South Eagleville before it comes to our school. We saw lots of good things like the Boston Massacre site. The tour ended at 1:05. Before I knew, it we were going home. We went through Warrenville again, but it was too dark to see much. A few days later it was Easter. We got a cuckoo clock.”

Page received an unsatisfactory grade on his essay. What's more, his irate teacher scrawled in red across the top of the es-

say: “See me!” As he recalls in his new memoir *Parallel Play* (Doubleday, 2009), such incidents were not uncommon in his childhood, and he knew why he was being scolded: “I had noticed the wrong things.”

A Question of Focus

The subtitle of Page's memoir is *Growing Up with Undiagnosed Asperger's*, and indeed Page didn't learn until age 45 that he suffers from what is called autism spectrum disorder, or ASD. ASD is usually defined by impairments in social interaction

(Many people with autism and Asperger's syndrome tend to **fixate on irrelevant information** in their world.)

MATT MENDELSON (Herbert); ALAN SCHEIN PHOTOGRAPHY Corbis (road signs)

(The people with autism were completing their work and moving on, **using their untapped capacity.**)

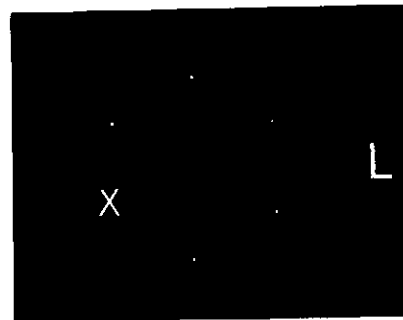
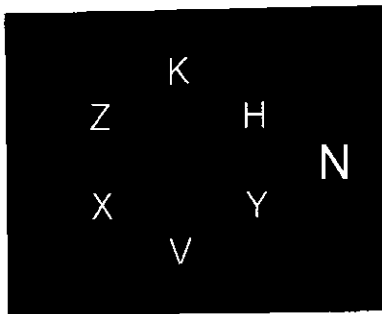
and communication, but many people with autism and Asperger's syndrome (in which symptoms are milder) also tend to fixate on and remember seemingly irrelevant information in their world. Their attention seems to be awry, or to use Page's words, they notice the wrong things.

But why? What's going on in the autistic mind that makes the details of bus routes infinitely fascinating? Why are people like Page so easily distracted from the main act? Psychologists at University College London think that it might be a mistake to consider such distractibility as simply a deficit. To the contrary, Anna Remington and John Swettenham and their colleagues speculate that people with ASD might have a *greater* than normal capacity for perception, so that what appears as irrelevant distraction is really a cognitive bonus. They decided to test the idea in the lab.

Selective Attention

Remington and Swettenham studied a group of people with autism spectrum disorder, most of whom had Asperger's, along with normal controls. They asked all the subjects to look at a computer screen, which displayed various combinations of letters and dots forming a ring (above). The subjects were instructed to very rapidly determine if the letters N or X were present in the ring and then hit the corresponding key on the keyboard. Some of the circles—those with more letters—were more difficult to process than others. There were also other letters floating outside the circle, but the subjects were specifically instructed to ignore those letters. Those floating letters were the laboratory equivalent of an irrelevant distraction in the real world.

The psychologists were measuring perceptual capacity—that is why they varied the complexity of the task. As expected, everyone was slower at the task when the ring contained more letters. The researchers were also measuring dis-



In an experiment, a ring of dots and letters (two examples above) appeared on a screen, and subjects had to indicate as quickly as possible whether the ring contained an N or an X, while ignoring the extra letter off to the side. People with autism spectrum disorder were equally as fast and accurate as the controls, and they continued to notice the extraneous letter as the task became more complex (with more letters appearing in the ring), suggesting that they have better than normal perceptual abilities.

tractibility. When a letter outside the ring was one of the target letters (N or X), the subjects often took a longer time finding the N or X in the ring—indicating they were distracted by the presence of a target letter in the location that they were supposed to ignore.

The psychologists reasoned that as long as the subjects' total perceptual capacity was not exhausted, they would also process the irrelevant, distracting letters within their visual field. Once they had surpassed their perceptual capacity—once the ring of letters was sufficiently complex—irrelevant processing would stop. So if ASD subjects in fact have greater processing capacity, then they should process more distracting information even as the main task becomes increasingly complex.

Seeing the Bigger Picture

And that is exactly what they found. As the researchers reported online in the journal *Psychological Science*, although there was no difference among subjects in either reaction time or accuracy on the

main task, those with ASD processed the irrelevant letters while solving much more complex problems. Their reaction times indicated that they were still noticing when the extra letter was an N or X, while also finding the target letter in the ring with the same speed and accuracy as the normal controls. Put another way, they weren't ignoring the main task, nor were they distracted away from it. Instead they were completing their work and moving on, using their untapped capacity.

But here's the rub. Although this increased distractibility may be a talent rather than a deficit, the psychologists point out, it nonetheless can have detrimental consequences in real-life situations. Just ask Tim Page about his uncanny facility for bus routes. **M**



WRAY HERBERT is director of public affairs for the Association for Psychological Science.

(Further Reading)

- ◆ **Selective Attention and Perceptual Load in Autism Spectrum Disorder.** Anna Remington, John Swettenham, Ruth Campbell and Mike Coleman in *Psychological Science* (in press). Published online October 14, 2009. www3.interscience.wiley.com/journal/122651082/abstract
- ◆ **Parallel Play: Growing Up with Undiagnosed Asperger's.** Tim Page. Doubleday, 2009.