The Case Study

Although both of her twins seemed to behave normally when they were newborns, James’s mother noticed that John looked at her when he was breastfeeding and James did not. At their first annual check-up, James’s father remarked to the pediatrician that James didn’t look at them when they talked to him, he didn’t respond to the sound of their voices, and he preferred to play alone rather than with others – even his brother John.

The physician had tested James’s hearing, and said that James did not seem to have abnormal hearing ability.

Perhaps John and James just had different kinds of personalities. After all, they certainly didn’t look alike. But as time passed, James’s parents became more and more concerned. By age 2, John said more words and spoke more clearly than James. John liked to play with other children, while James preferred to play alone, repetitively with the same toys.

At age 4, John and James started pre-kindergarten at a local school. After reading a report from the school district’s speech and language therapist, James’s mother sighed, “I hope James is just going through a stage and will grow out of it soon. She had consented to have the specialist meet with James so that his lisping and difficulty with being understood could be addressed by people with more expertise than she.

“The speech pathologist thinks that James has more than a speech problem, and that he should see the district’s psychologist; I hope it’s not autism,” she told her husband.

“We’ve both known that there’s more of a problem than his speech, but we’ve been reluctant to label it,” replied her husband. “Although James and John are twins, they’re so different. John seems so popular with the other children and defends James when kids or the teacher yell at him for taking toys or not listening. Now that James is in school, we need to do something more.”

Frustrated, James’s mother agreed with him, “James appears to be in his own world. If he keeps banging Thomas the Train against the table leg, the table is going to collapse—and so am I!”
Part 1: A Failure to Communicate

Use G2C Online to guide your inquiry.

1. Locate the video Autism – Repetitive Behavior (#1133) on the Autism map. What behaviors does James display that are not typical of boys with whom you’re familiar?

2. Access Diagnosing Autism (#875) and read through the screens. How do the diagnostic criteria of DSM-IV for autism compare with the ADI?

3. What aspects of James’s behavior, as described by his parents, seem to fit the DSM-IV diagnostic criteria of autism?

4. Consider your case study. Why might James’s parents be concerned that his brother John will develop autistic disorder?

5. Now, access the videos Autism and the Family (1) and (2) (#1125 and 1126). What kinds of stress do you think are experienced by James’s family?
Part 2: Like Two Peas in a Pod?

Following several visits, a child psychologist offered extensive services to James and his family. He asked the parents if they would be willing to let their twin sons participate in a research investigation designed to increase the understanding of autistic disorders. When James’s parents consented, the psychologist introduced them to an investigative team. The research team consisted of a psychiatrist, a clinical researcher, and a statistician. The study being conducted included both monozygotic and dizygotic twins.

1. Are James and his twin brother John, monozygotic or dizygotic? How do you know?

2. Based on your own knowledge of biology, compare the genetic make-up of monozygotic twins with the genetic make-up of dizygotic twins.

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<th>Monozygotic twins (Identical)</th>
<th>Dizygotic twins (Fraternal)</th>
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3. Use G2C Online to guide your study of autism. Read all three screens of Autism and Twin Studies (1). Then, answer the following questions:

   a. If the reported samples on screen 2 represented all pairs of same-sex twins, and at least one twin is autistic, what would be a valid statement about the incidence of autism in males versus females?

   b. The data table on screen 3, Concordance rates for autism among monozygotic and dizygotic twins, displays the percentage of monozygotic pairs or dizygotic pairs in which both individuals have been diagnosed with autism. How does the concordance rate for monozygotic twins differ from the concordance rate for dizygotic twins?

   c. Based on the diagnostic criteria for autism, a psychiatrist screened both James and John. James met the criteria for individuals with autism. John did not. If James and John had been included in this study by Bailey et al. (1995), where would their data have been entered?

4. Next, access the Chromosome Map of Disorders and Processes (#471) displaying a map of human chromosomes and the location of genes that have been associated with autism.

   a. Which chromosomes appear to have genes associated with autism?

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b. Why do you think it is difficult to determine which genes are associated with autism?

c. How does the difference in concordance rate of autism in monozygotic twins, compared with dizygotic twins, support the hypothesis that autism has a genetic component?

5. Summarize: How is diagnosing autism different from diagnosing a broken (fractured) arm?
Part 3: Identifying Facial Expressions

Over 100 years ago, Charles Darwin made observations about the universality of facial expressions across primates such as chimpanzees and humans. More recently, renowned psychologists Paul Ekman and Carroll Izard did extensive cross-cultural research establishing the universality of facial expressions. Numerous other studies have supported the hypothesis that very sociable people tend to read facial expressions and body language successfully. Individuals with autism, however, seem to have great difficulty reading facial expressions and body language.

Record your answers to the following questions:

1. How might reading facial expressions be adaptive? *(Remember: An adaptation is a structure or behavior that increases the organism’s chances of survival)*

2. How can misreading facial expressions lead to interpersonal problems? Give an example.

3. Use *G2C Online* to guide your inquiry on the autism. Locate the interactive tool, *Dissect-a-Face* (#866) and closely examine the facial expressions. Describe how:
   a. the happy expression differs from the sad expression.
   b. the angry expression differs from the fear expression.
   c. Characterize the facial expression for surprise. In your characterization, describe the shape and positions of the eyebrows, eyes, nose, and mouth. If you prefer, sketch your characterization of surprise.

4. By dragging and dropping upper and lower parts of the face, create mixtures of expressions and suggest a situation that might evoke each.

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5. Next, access *Reading Faces* (#867). Generally, people can easily identify the six *Dissect-a-Face* expressions, but many people find it difficult to identify less basic expressions. People with autism find identifying emotions very challenging. Try identifying all emotions shown in the *Reading Faces* activity. Keep a tally of emotions viewed and right or wrong answers.

   a. How many did you observe?
   b. How many did you identify correctly (with your first “guess”)?
   c. Most people identify at least a few of the facial expressions incorrectly. If you identified some incorrectly, how do you think this helps you understand people with autism better?
Part 4: The Hidden Face of Autism

Use G2C Online to guide your inquiry about autism, and record your responses to the questions below.

Listen to Mark Haddon, author of The Curious Incident of the Dog in the Night-Time, in Mark Haddon interview (#1389), talk about his novel of an autistic boy named Christopher.

1. Mark Haddon has stated, “There is this rather sort of joking wisdom... that autism and Asperger syndrome are just an extreme form of maleness”. Generate a hypothesis to test this assertion.

2. Develop a protocol to test your hypothesis.

3. Would it be possible to perform a controlled experiment to test your hypothesis? Why or why not?