

# Gender identity may be formed after birth

## Canadian boy raised as girl provokes theory

CHICAGO (AP) — A Canadian boy who was raised as a girl after his penis was irreparably damaged during circumcision continues to live as a woman, suggesting gender identity develops after birth, researchers say.

The case is only the second documented case of a boy being "assigned" a new gender after his genitals were mutilated during circumcision.

The study, released yesterday in the July issue of the journal *Pediatrics*, contradicts the findings in the first case, in which the boy returned to life as a male.

The Canadian who is living as a woman describes herself as bisexual. As of last summer, she was in a relationship with a woman.

To researchers, that suggests that sexual orientation may be determined in the womb, by genetics and prenatal hormones, but that gender identity may be determined months after birth.

### BIOLOGICAL MALE

"When you think about the fact that this person was an entirely normal biological male prior to the circumcision accident, this case may shed some insight of how malleable someone's gender identity is," said Kenneth Zucker, one of the study's authors and a researcher with the Clarke Institute of Psychiatry in Toronto.

"The outcome of our case — at least with regard to gender identity — suggests that it is pliable after all."

In both cases, the testes and remainder of the penis were removed and a vagina was created. The patients also were given female hormones, which enabled them to develop breasts and other female traits.

The operation in the first case was done at 21 months, seven months in the second case. Researchers say that mean there's a "window" of time after birth — some say to age 18 months — in which babies identify as neither boys nor girls.

### WINDOW OF TIME

"It suggests that, if you raise a child early enough to tell them that they are whatever sex, then they probably believe you and tend to act like themselves," said Michael L. Liben, a professor of psychology at Northwestern University who studies gender identity and sexual orientation.

In both cases, the patients studied had "tomboyish" characteristics. In the first case, initially studied in 1973, Johns Hopkins University, the patient rejected dolls, tried to urinate standing up and decided to return to life as a boy at age 14, after learning about the operation.

He also reported exclusive attraction to women and has since married a woman.

The Canadian patient has adjusted to life as a woman. She was not identified by researchers and did not respond to a request for an interview sent through her doctor.

She works in a blue-collar job almost always done by men, Zucker said.

Last year she told researchers that she had had relationships with men but was not with a woman.

Nurture

Important distinction between Sexual orientation and gender identity.

## Case Study: The Boy Who Was Raised a Girl

David Reimer (originally named Bruce), from Winnipeg, Manitoba, was circumcised at eight months. Unfortunately, the surgery went horribly wrong and his penis was destroyed. David's parents decided to "reassign" his sex—two months before his second birthday he underwent castration and cosmetic surgery to construct an exterior vagina. Further surgery would be necessary to fabricate a more complete vagina as the toddler got older.

His parents renamed him Brenda and began to raise him as a girl. Pills containing **estrogen**, the female sex hormone, were prescribed for him at the age of eleven. At this time, his parents approached him about genital surgery, which he refused. When he was fourteen, he was told the truth about his identity and decided to immediately revert to being male. But the damage had been done, and David had suffered terribly as a result of his sexual reassignment.

Even as a small child, his taste in toys, his manner of play, the way he walked, and his appearance always differed from the other girls he played with. As well, he could never be "trained" to urinate sitting down. When he began school, he was treated as a misfit and had few friends. He was socially awkward and became sullen, anxious, and withdrawn. David struggled academically and ended up leaving school altogether and being tutored at home on the advice of his psychiatrist. David made two suicide attempts after learning the truth of his birth.

How can we explain David's experience? Sex reassignment is not common, but it does happen. Some babies are born with ambiguous genitalia, neither fully female nor fully male. Parents and doctors decide whether the child will be "made" into a male or female. In David's case,

the recommendation for a sexual reassignment came from Dr. John Money. Money was an influential sex researcher with a Ph.D. from Harvard University, who practised at Johns Hopkins Hospital in Baltimore. Money believed that sexual identity is a result of environmental rather than biological factors—the way a child is treated, the toys a child is given, and the expectations parents have of a child. Money recommended that David's parents, his doctors in Winnipeg, and other adults in his life keep David's true sexual identity a secret from him. He believed keeping David ignorant of his background would help him successfully adjust to his life as a girl. It appears that Money's reputation intimidated David's Winnipeg doctors, who went along with the plan. They continued to do so despite evidence that David's sexual reassignment was not working.

David is now in his thirties, married with three children. John Colapinto has written a book about David's life, entitled *As Nature Made Him: The Boy Who Was Raised A Girl* (Harper Collins, 2000).

1. What is sex reassignment and why did David have to have the procedure?
2. What specific problems did David, as Brenda, have while growing up? Why do you think he had those problems?
3. What do you think David's parents did differently when they began raising him as a girl? What might they have done differently if David had been raised as a boy?
4. What evidence does this provide for the nature-nurture debate?

An intriguing aid to understanding this debate is the study of identical twins. Even more help is examining identical twins raised apart from one another. Since 1979, the University of Minnesota has undertaken a study of 80 such twins. Read the amazing story below about Jim Lewis and Jim Springer.

MINNEAPOLIS (AP) - A friend of Mark Newman was astonished when he met Gerald Levey at a firefighters convention: Newman and Levey looked enough alike to be twins. Only after he introduced them did they learn they actually were.

Separated as infants and reared 100 kilometres from each other in New Jersey, the two men - both of whom became fire captains have been catching up on 31 years apart since that meeting 10 months ago.

Scientists at the University of Minnesota are learning from them, too, while trying to fathom the relative importance of heredity and environment in forming individuals' personalities.

The brothers are among 80 sets of identical twins who have been studied since the Minnesota Study of Twins Reared Apart began in 1979.

Newman and Levey recently spent six days undergoing tests at the university. Researchers scanned their brain waves, monitored their heart rates, some 15,000 questions designed to reveal their personalities, habits, tastes, values and idiosyncrasies.

### INFLUENCE ON IQ

"We knew we started that there was a lot of evidence to support the theory of genetic influence in IQ and possibly personality and a few other traits," said Dr. Thomas Bouchard, who started the study.

"But we took it upon ourselves to add a lot of other kinds of measures...and one of the things that has been sort of surprising is that more things seem to be genetically influenced than we had thought."

Reflecting on Newman and Levey, Kevin Haroian, a psychologist working on the study, said "These guys had been going along separate pathways, and to end up in similar jobs like they did - that says a lot.

"I don't think there's a gene to become a firefighter, but what they do have is strong physiques. They have an aptitude for firefighting; they have a lot of small factors that somehow have a configured for them to find a similar pathway in life."

Some other separated twins examined in the study have even more in common.

Jim Springer and Jim Lewis were brought together in 1979 at age 39 after being separated when they were five weeks old.

They discovered that each had a white bench around a tree in his yard, drove a chevrolet, chain smoked the same brand of cigarettes and had divorced a woman named Linda. Both were remarried to women named Betty.

One had a son named James Alan, the other had a son named James Allen. they had dogs named Toy. the two had served as sheriff's deputies, enjoyed similar hobbies and had headaches and weight gain and loss.

### OVERWHELMINGLY SIMILAR

Some of the similarities could be coincidence, but the Minnesota researchers say they find an astonishing number of such coincidences with most of the twin sets they study.

"While every pair has a different set of circumstances, they're still overwhelmingly similar," said Dr. Nancy Segal, the project's co-director. "I find that a continuous source of fascination."

The traditional psychological theory, Bouchard said, is that children reared in the same family are similar because of their exposure to similar values, schooling and social settings.

Given that premise, the actions of criminals, for example, are often attributed primarily to their social background and family upbringing.

"I certainly believed that for many years," Bouchard said. "But our research, plus adoption research carried out by others suggests that it's not true. It's very nicely shown by looking at how similar twins reared apart are which means the common family influences have to be pretty modest."

Identical twins who grew up in different families provide an ideal means for sorting out genetic versus environmental influences the researchers said, because their genes are the same.

Bouchard emphasized that the Minnesota study did not conclude there is, for instance, a gene which makes a person a criminal. One can inherit strong tendencies, he said, but those can be countered by environmental influences.

So far, Bouchard and his colleagues have evaluated 80 pairs of identical twins reared apart and about 50 pairs of fraternal twins with a goal of 100 identicals and 75 fraternal.

Although the sample may be too small to hold up against any doubt, one researcher, psychiatrist David Lykken, said the Minnesota team hopes to create "a basis for hypotheses that can be further tested by other studies."

The closest correlations between twins are seen in IQ tests, according to Lykken and Bouchard, who said in some cases it appears as though the same person has taken the test twice.

The researchers are not ready to issue a full report of their findings, having spent most of the past seven years locating and testing twins. But data analyzed so far point consistently to a genetic influence greater than previously thought in almost every area of development, Bouchard said.

# A Flawed, Warmed-Over Idea ©1989

~By David Suzuki~

The “nature-nurture” controversy revolves around the age-old question of how much of human intellect, behaviour and emotion is determined by heredity (nature) and how much is influenced by the environment (nurture).

At the end of the last century and in the first decades of the 1900s, nature was held to be the dominant factor. After the Nazi Holocaust, which was predicated on genetic theory, scientific judgment shifted to the overwhelming role of nurture.

The April 14 issue of *U.S. News and World Report* featured a cover story with the provocative headline: *How Heredity Shapes Personality—The Gene Factor*. The article reported that the idea of the heredity basis of much of human behaviour is being revived by studies done with identical twins raised together and apart, and by the claims of sociobiologists.

They invoke genetics as the basics for the complexities of human behaviour and social interactions. They extrapolate from the behaviour of birds, insects, fish and other animals. Once again, victims of poverty, racism and imprisonment are being blamed for their own problems: “It’s all in their genes.”

But the whole nature-nurture question really is a red herring. Of course, the genetic blueprint that we inherit from our parents shapes us. Look at the striking physical resemblance of identical twins. And to the same extent that there is a genetic component to weight, height

and skin colour, then people born at the extreme ends of the normal distribution curves will have personality effects that have a hereditary component. And because genes are interlinked and control how neurons work, so too, behaviour and personality are affected by heredity. Are we then deprived of free will, driven to act simply because of the gene-directed neurocircuitry in our brains? Of course not. The evolutionary strategy of our species was the development of a huge and complex brain that has an enormous capacity to learn through observation, trial-and-error and imagination. Not instinct, but flexibility in our behaviour is our characteristic.

We like to pinpoint a biological factor as the cause of social problems so that we can design our corrective measures accordingly. This has been highly successful in combating disease. But even here, nurture’s role is significant. For example, Harvard geneticist Richard Lewontin points out that all human beings carry the bacilli associated with tuberculosis. Yet only a small subset of our population comes down with TB: they are native people, migrant workers, and welfare recipients. Poverty as well as the bacterium is factors in the outbreak of tuberculosis; but we find it easier to deal with the disease itself than to alter the conditions that ensure its occurrence.

Inherent in the claim that something is hereditary is the notion of inevitability, that there’s nothing

that can be done. This is a dangerous impression that must be discarded. In studies on temperature-sensitive mutations in fruit flies, my colleagues and I found such mutations have effects ranging from alterations in patterns of bristles on the body to severe behavioural defects and death. These defective traits appear reliably from generation to generation, so long as the flies are raised within a specific temperature range. Outside that range, the flies may be indistinguishable from normal. We, too, are the end result of an interaction between genes and environment, and it is a mistake to suggest that when a trait has a hereditary component, there's little we can do.

Every human being on the planet is unique. Even when two people are completely identical genetically, they are distinguishably different in personality and physical appearance. The range of differences between identical twins may not be as great, but experience and environment act upon their similar genetic makeup to mold unique individuals.

I share genes with people in Japan; our physical resemblance is therefore striking. But the enormous psychological and behavioural gulf that separates me from those people is obvious the moment we open our mouths—environment has been the most important factor shaping our personalities.

The question of how much nature and nurture determine our personalities is rather trivial scientifically, but the social implications can be staggering, as the victims of the Nazi concentration camps can attest. In Singapore, Prime Minister Lee Kwan

Yew has instituted a program of rewarding uneducated people for being sterilized after having one or two babies, while university graduates who have more than two are given bonuses!

As we gain powerful dexterity in manipulating the genetic blueprint (DNA), we itch to use the technology. In speculating that heredity plays a role in human personality, we begin to assume it is the overriding influence. Recently, Melbourne biologist, Carl Wood suggested that genetic engineering might be able to eliminate the "killer instinct" in humans, lessen dependence on food, elevate our tolerance of pollution, and increase beauty and intelligence. Once again, scientists have become intoxicated with their discoveries and are confusing what they know with what they believe. The nature-nurture debate is alive and well.

**Consider the following questions:**

1. In the fifth paragraph, Suzuki states his thesis—summarize it in your own words.
2. Suzuki has concerns over the power of both sides of the debate. What examples does he use to show the consequences of focusing only on the nurture argument?
3. Genetics are indeed influential; however, what examples does Suzuki put forth to show the dangers and risks that result from such a narrow focus on the influence of nature?
4. What is your personal reaction to this debate?