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A Question of Resilience

By [EMILY BAZELON](#)

In the spring of 1993, when I was an intern at The New Haven Advocate, a local weekly, I met two girls named La'Tanya and Tichelle. La'Tanya was 13, Tichelle was 11 and, along with their two younger sisters, they had recently returned from a year in foster care to live with their mother, Jean. (I have used middle names to protect the family's privacy.) I was supposed to spend an hour or two with them and write an article for the paper about families that reunite. But I liked the girls, and I decided I needed to interview them again — the joy of being an intern, after all, is that no one really cares when you finish your article. The next time I showed up, about a week later, a worried-looking woman was talking to the girls. She was a prosecutor who was about to try Jean's boyfriend, Earl Osborn, for sexually abusing La'Tanya and Tichelle over several years and their 7-year-old sister, Charnelle, for a shorter period. The girls were her chief witnesses.

At the trial that May in a courtroom in New Haven, La'Tanya testified that Osborn started touching her when she was in kindergarten. She told her mother, and Jean put him out of the house. But somehow, though he wasn't violent, she couldn't make him stay out. She would later say that this was the greatest mistake of her life, but in court, she said as little as possible.

During the next five years, Jean warned Osborn to keep away from her daughters. He didn't. When La'Tanya and Tichelle were about 10 and 8, Jean testified, she put a lock on the door of their bedroom. Osborn broke the lock three times. Jean would find him lying on top of the girls, rubbing against them and putting his hands down their pajamas, or next to them masturbating. She gave her daughters a stick to sleep with. But she never banished him from their home.

In June 1991, after being tipped off that there might be a problem at home, a school social worker pulled La'Tanya out of her sixth-grade graduation party and asked if anyone was bothering her. La'Tanya shook her head no and then started to cry, and to talk. Jean lost custody of La'Tanya, Tichelle, Charnelle and their youngest sister, Chanté. That's when the girls lived in foster care, first with a family and then for several months with their grandmother. Osborn was arrested. In May 1993, on the strength of La'Tanya and Tichelle's testimony, a jury in New Haven convicted him of nine charges of sexual assault. Osborn was sentenced to 85 years in prison. The jury foreman was Jon Butler, a history professor, who is dean of the [Yale](#) Graduate School of Arts and Sciences. "The verdict hinged overwhelmingly on the credibility of the girls," he told me recently. "They were so good because they weren't so good. They weren't acting, this wasn't contrived, what happened had been deeply disturbing to them. They conveyed this with the kind of precision that made it completely believable."

During the summer after the trial, I spent time with the girls, taking them to the playground and the pool. I wrote about them for The Advocate. Then I left, as interns do. I did stay in touch with La'Tanya and

Tichelle, because I was worried about them and because I admired them. They took care of each other, and they were resourceful. "They're very appealing kids, and I don't think anyone expected that, considering what they've been up against," Cecilia Wiederhold, the prosecutor, said in my Advocate article.

As the girls grew up, they kept exceeding my expectations. Study after study has shown that sexually-abused children — especially those who grow up in the sort of low-income, messy surroundings that the girls did — are more likely to develop a raft of emotional and health problems, including [depression](#), [post-traumatic stress](#) disorder and suicidal thoughts. As adults, they are more likely to be unemployed, homeless, addicted to drugs or alcohol and alone. Now, at ages 26 and 24 respectively, La'Tanya and Tichelle are none of those things. La'Tanya works as a certified nursing assistant at St. Raphael's Hospital. She has her own apartment in a small town on the Connecticut shore. She is raising her two sons, who are 10 and 5. Tichelle is a computer operator for the city of Bridgeport. She lives with her 1-year-old son in the same apartment complex as La'Tanya. Both sisters graduated from high school and have their own cars.

By middle-class standards, these accomplishments seem modest. But financial independence and stability are rare and hard-won for anyone in the poor black New Haven neighborhood where the sisters grew up. Jean raised her children on welfare and never learned to drive. La'Tanya and Tichelle's fathers have been almost entirely absent. On the blocks of row houses and vacant lots where they were raised, teenage mothers far outnumber married ones.

Over the years, I've wondered what accounts for their relative success. Were La'Tanya and Tichelle different, and if so, why? Weren't their lives supposed to have fallen into chaos? How is it that some children show a certain resilience after experiencing a trauma and others do not?

The everyday meaning of the word "resilience" extends to anything that bounces back. Estée Lauder makes Resilience Lift Eye Crème and Hanes makes Resilience Pantyhose. But in psychology, resilience has a specific meaning. It's the word for springing back from serious adversity, like abuse, war or natural disasters. You exhibit resilience (as opposed to plain competence) if you cope with terrible misfortune and live a relatively successful life as defined by [mental health](#), success in school or at work or solid relationships. In studies of the long-term effects of physical and sexual child abuse, 20 to 40 percent of victims show few signs of behavioral or mental-health problems. And many of them don't appear damaged later in life. As Ann Masten, a resilience researcher, has written, resilient children have the benefit of "ordinary magic." When it comes to abuse victims, though, this finding is rarely trumpeted, for fear that saying abuse isn't always inevitably harmful is tantamount to saying it's not always bad.

Over the last several decades, a small group of researchers has tried to understand how a minority of maltreated children exceed expectations. The grandfather of resilience theory is Norman Garmezy, who by the 1960's had begun asking why some children of schizophrenics fared better than others. In the 1970's, Ann Masten joined Garmezy at the University of Minnesota, and the two, along with others, started a project spanning more than two decades. They looked at a child's personality, among other things, imagining resilience as a function of temperament, will or intelligence. While children of average intelligence or above were more likely to exhibit resilience, the researchers noted that good relationships with adults can exert an effect that is as powerful, if not more, in mitigating the effects of adversity.

In recent years, biological science has proposed a new paradigm. The latest research shows that resilience

can best be understood as an interplay between particular genes and environment — GxE, in the lingo of the field. Researchers are discovering that a particular variation of a gene can help promote resilience in the people who have it, acting as a buffer against the ruinous effects of adversity. In the absence of an adverse environment, however, the gene doesn't express itself in this way. It drops out of the psychological picture. "We now have well-replicated findings showing that genes play a major role in influencing people's responses to adverse environments," says Sir Michael Rutter, a leading British psychiatrist and longtime resilience expert. "But the genes don't do anything much on their own."

Rutter opened a GxE research center because he was frustrated that most psychiatric studies tracked the effects either of genes or of environment rather than looking at them in tandem. Despite a few initial successes, like the discovery of the gene that causes Down syndrome, most searches for genes that fully explain psychiatric outcomes — "the alcoholism gene," "the schizophrenic gene" — have failed. Meanwhile, in the field of medicine, it's increasingly common to consider external factors when studying the effects of genes. "With [heart disease](#) and [cancer](#), genetic researchers have always known to include factors like [smoking](#) and exercise," says Terrie Moffitt, who is on the faculty of Rutter's research center at the Institute of Psychiatry in London and of the University of Wisconsin. "We wanted to do the same thing for the study of behavior."

The breakthrough moment for GxE came in 2003, when Moffitt and her husband and co-investigator, Avshalom Caspi, published a paper in *Science* that discussed the relationship between the gene, 5-HTT, and childhood maltreatment in causing depression. Scientists have determined that 5-HTT is critical for the regulation of serotonin to the brain. Proper regulation of serotonin helps promote well-being and protects against depression in response to trauma or stress. In humans, each 5-HTT gene has two alleles, and each allele occurs in either a short or a long version. Scientists are still figuring out how the short allele affects serotonin delivery, but it seems that people with at least one short 5-HTT allele are more prone to depression. And since depression is associated with unemployment, struggling relationships, poor health and substance abuse, the short allele could contribute to a life going awry.

About one-third of the white population have two copies of the protective long allele. About one-half have one long allele and one short one. And about 17 percent have two short alleles. (African-Americans are less likely to have a short allele; Asians are more likely.) In their 2003 study, Caspi and Moffitt looked at 847 New Zealand adults and found a link between having at least one short 5-HTT allele and elevated rates of depression for people who had been mistreated as children or experienced several "life stresses" — defined as major setbacks with jobs, housing, relationships, health and money. Having two short alleles made it highly likely that people who had been mistreated or exposed to unhinging stress would suffer depression. One short allele posed a moderate risk of depression in these circumstances. Two long alleles, on the other hand, gave their carriers a good chance of bouncing back under negative circumstances. In other words, as a group, children with two risky alleles lost out badly when their environments failed them, children with one risky allele were at some risk and children with good resilience alleles often carried a shield. The risky variation of the gene doesn't confer vulnerability, though, if an individual who carries it never experiences abuse or serious stress — in other words, it's not a "depression gene" in any general sense. It seems that only under dire circumstances — abuse, the strife of war, chronic stress — is the gene triggered. Eventually scientists hope to understand more about other genes that most likely play a role like 5-HTT's.

Researchers who study humans cannot, of course, run controlled experiments by randomly assigning some children to abusive homes. But primatologists can. At a laboratory in rural Maryland, run by the National Institutes of Health, Stephen Suomi studies 500 rhesus monkeys. Each year, Suomi divides newborn monkeys into several groups. One group live with their mothers, much as they would in the wild (except for the indoor pens and the daily rations). Another group, created to mimic the experience of a neglected or abused child, never see their mothers, spending two weeks in an incubator and then moving into a small group of peers.

Rhesus monkeys share with humans about 96 percent of their genes — including the long and short variations of 5-HTT. Using [DNA](#) samples, Suomi is able to track which of his monkeys have which allele. In an ongoing study, Suomi has found that motherless, peer-raised monkeys who have a copy of the short 5-HTT allele are more likely to experience fear, panic and aggression (accompanied by low levels of serotonin acid in spinal fluid) when a strange monkey in a cage is placed next to them. Motherless, peer-raised monkeys with two long alleles, on the other hand, are more likely to take the presence of the stranger in stride, as mother-raised monkeys do. (Only a tiny number of monkeys have two copies of the short allele, so they're not studied.) "How you grow up affects your hormonal output and the structure and function of the brain," Suomi says. "And these effects are tempered by the kind of gene the monkeys carry. So it's a true interaction."

In Suomi's lab, there's a room filled with large cages of 2- and 3-year-olds — adolescents approaching adulthood, in monkey years. "Go in quickly and quietly," Suomi tells me and then follows me through the door. Some of the monkeys stay in the middle of the cage, eyeing us without seeming preoccupied. Another group races to the back and huddles together in the farthest corner, their small fingers wrapping around one another's fur. They twitter and turn their faces away in distress.

The middle-of-the-cage monkeys were raised by their mothers. The freaked-out ones at the back raised one another. After a few minutes, some of the peer-raised monkeys begin to dart forward. After a few more minutes, they settle in with the mother-raised group. But others never move from the back of the cage. According to Suomi, you could approach the cage a hundred times and each time see the same result. And each time, the peer-raised monkeys would race to the back, and then a few would mirror human resilience by coming forward. And they would generally be the monkeys with two long 5-HTT alleles. The good version of the gene.

Suomi's peer-raised monkeys are deprived of their mothers and other adult monkeys. Abused children, by contrast, don't just live with other children. They may have in their lives grandparents, aunts, teachers, maybe an adult they know from church or a volunteer from a Big Brother or Big Sister program. And they are much more likely than other children to name one of these adults as the person on whom they most rely.

Caspi and Moffitt's research was important in showing a link between genes and an abusive environment, but they didn't explore the effect of mitigating factors in the abused children's lives. Joan Kaufman, a Yale psychiatry professor, has taken the next step by doing so. In a paper this month in the journal *Biological Psychiatry*, Kaufman reported on 196 children between the ages of 5 and 15, 109 of them removed from their homes in Connecticut because of reports of physical or sexual abuse or neglect. This group was compared with a second nonabused group with the same racial composition — about 28 percent white, 24

percent Hispanic, 28 percent African-American and 20 percent biracial — and the same income of \$25,000 or less. (Physical and sexual abuse are more prevalent among poor families, though abuse happens at all economic levels. Studies like Caspi and Moffitt's, which include families of varied income, show that the resilience findings apply to middle- and upper-class kids as well as poor ones.)

Kaufman gave all 196 children a questionnaire about their moods, which measure mental health. She also used DNA tests to check their 5-HTT alleles. Kaufman's abused children with two short 5-HTT alleles had a higher mean score for depression than the abused children with two long alleles and the nonabused children, no matter what their alleles. (In Kaufman's study, which was smaller than Caspi and Moffitt's, the moderate risk of depression posed by one short allele didn't show up, though that finding has been replicated by other researchers.)

In her recent paper and in earlier research, Kaufman also built on the work of psychologists who have measured the quality of abused children's relationships to adults, asking the children to name the person they most often "talk to about personal things, count on to buy the things they need, share good news with, get together with to have fun and go to if they need advice." The mean depression score for abused children with two short alleles who rarely saw the adults they named was off the charts. If the children with two short alleles saw the adults they counted on daily or almost daily, their depression scores were very close to the scores of the children with two long protective alleles — and within reach of the children who had not been abused. (The children with the protective version of the gene were far less affected by a lack of contact with their primary adult.) "Good support ameliorates the effect of abuse and of the high-risk genotype," Kaufman says. While he notes that Kaufman's research is preliminary, Dennis Charney, a psychiatry and neuroscience professor at Mount Sinai School of Medicine, says that the study used "solid methodology and yielded very interesting findings."

La'Tanya and Tichelle had relatively good support. When the state removed the girls and their sisters from their home, their grandmother took them in. "She did everything for us," La'Tanya remembers. Later, a half-sister who is 10 years older than La'Tanya began picking her up on weekends. "I spent a lot of time with her," La'Tanya says. "We'd rent movies, go places, do a lot of things together."

Having "good support" isn't just a question of good luck. Researchers have found that children who are resilient are skillful at creating beneficial relationships with adults, and those relationships in turn contribute to the children's resilience. La'Tanya and Tichelle were both good at forging these bonds. When I left New Haven in 1994, they wrote me. I moved back a few years later, and Tichelle called regularly, came to my office to meet me for lunch, asked me to stop by her house on the weekends. La'Tanya soon started calling, too. Sometimes the sisters were behind on their bills and, always with embarrassment, asked me for money. But more often they called, and still call, to check in, to ask after my kids or tell me about theirs. They let me know that I matter to them, and that has made them matter more to me.

In the last year or so, I've become more aware that La'Tanya and Tichelle are quite different and that the darkness of childhood seems to have left a more indelible mark on the older sister. La'Tanya and her sister were both molested. And they lived with their mother, who was remote — I don't think I ever saw Jean hug her daughters in the months surrounding the trial. But La'Tanya shouldered more of a burden than Tichelle did. As the oldest, La'Tanya often had to look after her sisters — make them dinner, put them to sleep. "La'Tanya raised us," Tichelle says. "She's more like a mom than a sister." La'Tanya wrote in her diary last

year, "Ever since I can remember I've taken on more than any one person should have to."

In March 1994, when they were 14 and 12, the girls sent me letters. Tichelle wrote: "My grades are excellent. I got all A's and two B+'s. In school I am a cheerleader we cheer every Tuesday and Thursday. I am still in double dutch it's very fun." La'Tanya also reported her good grades. But mostly she described the heaviness of her world. "A lot of people have been getting killed," she wrote. "A house almost got burned down and nobody ever goes outside." A year later, La'Tanya ran away from home. She moved in with her 17-year-old boyfriend and decided to have a baby. The thread that runs through these decisions is her anger and disappointment with Jean. "I had a baby to be loved by someone," La'Tanya says. "When all the mess fell out, my mother didn't do anything about it. That's what made me think she didn't love us."

Tichelle, by contrast, forgave her mother and relies on her. "That's my mom, and I'm not going to let anyone take her away." On the day Tichelle went into labor last spring, the father of her baby was arrested for selling drugs. She called her mother, and after the birth Jean slept at the hospital with her daughter and grandson. Jean takes care of the baby every day while Tichelle is at work, as she has done for her other grandchildren.

Before her baby was born, Tichelle landed a permanent position in her office after impressing her boss as a temp. "I'm 23, and I know what I want for myself," she told me last year. La'Tanya, meanwhile, was struggling with crying spells and [panic attacks](#). After a recurrent nightmare about Osborn, she would wake up and compulsively check and recheck the locks in her apartment. She couldn't stop thinking about Osborn's gun — "a black shotgun with a light brown barrel."

There are a lot of reasons that La'Tanya has had a harder time than her sister, not least of them that she was abused for a longer period of time. But reading all the GxE research made me wonder whether she was also more genetically vulnerable. I asked the girls if they'd be willing to be tested, and they agreed — they said they were curious. Last month, La'Tanya, Tichelle and Charnelle (who had been abused by Osborn for a shorter period when she was 3) sent cheek swabs with their DNA to a lab run by a Colorado-based company called NeuroMark, which tests for the 5-HTT alleles.

The study of resilience is nearly 50 years old. Yet its contribution to our understanding of the effects of child abuse has gained little traction beyond a small subset of academics. Historically, the study of resilience inadvertently collided with the movement to treat child abuse as a national cause for alarm. In the 1950's, experts like Alfred Kinsey minimized the damage of sexual abuse. The fright described by children who'd had sexual contact with adults was "nearer the level that children will show when they see insects [or] spiders," Kinsey wrote, as Joseph E. Davis, a sociologist, recounts in his recent book, "Accounts of Innocence." Until the mid 1970's, standard psychology textbooks also played down the effects of abuse and put the incidence of incest at one in a million.

By the beginning of the next decade, the textbooks were being rewritten. Led by Judith Lewis Herman, a professor of clinical psychiatry at [Harvard](#), feminists shredded the myth that sexual abuse is rare and does little significant harm. They argued that even a brief, single incident of abuse could and often did scar victims for life. In 1980, Herman helped win an official psychiatric diagnosis for post-traumatic stress disorder, as a response to trauma that causes people to "dissociate," or fragment, by alternately feeling numb and reliving the event. According to its clinical definition, PTSD can strike a victim of rape or child

abuse as easily as a combat veteran. The orthodoxy that abuse necessarily causes trauma grew and still remains entrenched. It has extensive institutional support — \$29 million a year in government financing goes to a national "traumatic stress" center and 44 hospitals and community-based programs around the nation. "The problem in our country isn't that we overidentify trauma," said Ellen Gerrity, associate director for the national center. "It's that we underidentify it."

All along, a few experts have raised doubts about equating childhood sexual experience with trauma and about the assumption that abuse destroys victims' lives. But they got little attention — until an academic brush fire over terminology exploded into a public war. In 1998, Bruce Rind, Robert Bauserman and Philip Tromovitch published an article in *Psychological Bulletin*, a journal of the American Psychological Association, analyzing 59 studies of the long-term effects of sexual abuse and adult-child sexual contact on college students. "At the time, the starting hypothesis in the field was that child sexual abuse, broadly defined, was extremely harmful in all cases," Rind says. "Our idea was to take this very strong statement and to be statistically and methodologically rigorous about testing it."

The Rind paper found only a marginal difference between the psychological well-being of college students who'd been "sexually abused" and those who hadn't. But there was a catch: Some of the studies being analyzed defined sexual abuse broadly to include exhibitionism and consensual contact between teenagers and adults. When abuse was limited to lack of consent, force or incest, its deleterious effects were more pronounced. So Rind and his co-authors recommended narrowing the definition of abuse.

Conservatives condemned the Rind paper, and Congress denounced it. The uproar virtually derailed the hope of opening child sex studies to rigorous inquiry. "There had been an underestimation of the extent to which children can recover from sexual abuse," says David Finkelhor, a sociologist who directs the Crimes Against Children Research Center at the University of New Hampshire and who has found that pre-existing depression may make children vulnerable to sexual abuse and may help account for the problems some suffer afterward. "But that article started a trend in the opposite direction," he says — by discouraging investigations of the differences between harmful sexual abuse and other sexual contact.

Still, in trying to understand why some children are not scarred for life, resilience research brightens a picture that is often painted in black. And the promise of GxE brings with it new excitement — and grant money. Caspi and Moffitt, whose article about 5-HTT received widespread praise, didn't bother to try to get government money when they began collecting DNA data in 1998. Now they receive \$500,000 a year in N.I.M.H. and U.K. government grants. Other researchers have similar support for GxE work.

If GxE pans out as the enthusiasts hope, it could change not just our understanding of the effects of abuse but also our treatment of it. Neurobiological research on mice and rats has begun to look at the effect that the 5-HTT gene has on the brain at the molecular level. Eventually, a designer drug might succeed in mimicking precisely what the long-allele variation of 5-HTT does to foster resilience. "A magic drug down the line — yes, that's the whole point of understanding the neurological mechanisms," Joan Kaufman says.

Other experts, however, are skeptical. Whatever an abused child's genes, they argue, she still needs the ingredients that promote resilience — adults she can trust, the reinforcements that make her believe in herself. "It's nice to know what's going on in the body," says Suniya Luthar, a psychology professor at [Columbia University's Teachers College](#). "But what's the real promise here? We already know what people

need to be resilient. From the standpoint of intervention, I'd rather see money go toward things that are more likely to make real change," like developing effective interventions. Luthar also worries about genetic profiling. "Are we going to think about genetic engineering" to weed out the high-risk variation of a gene? she asks.

Kaufman, too, warns that finding out which variation of 5-HTT you carry is not like getting a diagnosis. The short allele increases vulnerability across a large group rather than exposing any one person who has it. Other genes, as well as relationships, contribute. "Think about it as one factor on a scale," Kaufman says. "It can tip the scale toward depression or away from it. But other factors can tip the scale, more powerfully, in the opposite direction."

Still, the test results for La'Tanya, Tichelle and their younger sister Charnelle are intriguing. As it turns out, Tichelle carries only the protective version of the gene (two long alleles). So does Charnelle, who at 20 is thriving, with a steady job at a nursing home and an apartment she shares with a boyfriend whom her family likes.

La'Tanya, though, carries one copy of the short 5-HTT allele, putting her in the group of abused children who are at moderate risk of depression. Perhaps her genes help account for the times she has gone to the hospital because she's so anxious she can't breathe and the days she can't stop crying or get out of bed.

Yet, as Kaufman says, La'Tanya's genes don't doom her to unhappiness. She has good days too. Last year she signed up with a home-health-aide agency and was frustrated — and broke — because she was getting only scattered hours of work. She wanted a hospital job. But that required a state recertification. I gave her \$700 for the four-week course she needed.

At the graduation ceremony last spring, two dozen students ate pizza next to the hospital beds and dummy patient they'd practiced on. "I got a 93 on the final," La'Tanya told me twice. She was wearing a pink turtleneck sweater, pressed jeans and high-heeled black boots. She'd taken out her lip piercing because the teacher said it might put off potential employers. "Now I just need to take the licensing test," she said to a friend. "When we leave from here I'm going over to sign up." She did. She passed. She got the hospital job she wanted. Keeping it hasn't been easy, especially because her younger son has been acting up in school. But she is doing it.

Next month, NeuroMark will begin selling the 5-HTT test to people whose doctors request it. The results won't solve the riddle of which survivors of abuse fare better than others. But they may provide a clue. "I think for me it helps explain things," La'Tanya said. "I feel a little better that there is a reason, another reason, for my life being hard. And I understand that what I'm able to do for myself and my kids, even with this, is good. It's good."

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