

## Chapter 5

### **A Tale of Two Sisters**

The prospect of having to start all over again in a new land suddenly seemed frighteningly unrealistic. My fragile self cried out in self-pity, "I am too old; it is too late!"

--Sister Dolores Rauch

Town by town, the Nazi takeover of German society in the 1930s was carried out through intimidation, arrests, torture, and murder. One of the many targets of their campaign was religious education. Many Catholic schools were closed; religious curricula were prohibited; would-be teachers were instructed to drop their religious affiliation and join the Nazi party; and Nazi-designed courses were imposed to inculcate racism, nationalism, and militarism.

In the face of the Nazi threat, the American provinces of the School Sisters of Notre Dame offered to take in any of their German sisters who wanted to emigrate. When word of this offer reached the Munich motherhouse, sixteen prospective novices declared their intention to leave. And then, one by one, their resolve weakened; many spoke no English, and they worried – with

reason – that they might never see their families again. So it was that on August 26, 1937, only two novices, accompanied by an older sister, boarded the steamship Deutschland in Hamburg, bound for New York.

The two young novices kept their own company during the eight-day journey. They felt awkward in their new habits and veils, which they had received only shortly before the trip, and hesitant in their new role as sisters. They also had strict orders not to discuss German politics with anyone, as rumor had it that some of the passengers were Nazi spies. In keeping with the customary restrictions of the time for novices, the young women maintained a discreet detachment from each other, too, never sharing private thoughts about this momentous leave-taking. To pass the time, they sang German songs – a favorite, one of them remembered later, was “Goodbye, Dear Homeland.”

They disembarked at Ellis Island on a muggy September morning and then were driven from Battery Park through Manhattan to a convent on Ninety-fifth Street. More sisters had arrived on another ship, and before the end of the day, the two novices were crowded into a station wagon with three other young women, plus a mother superior, for the twenty-six-hour trip – straight through--to Milwaukee, Wisconsin.

Nearly sixty years later, the wonder of that trip remained with them: the wide rivers with incomprehensible Indian names, the long ribbons of highway, the cities clogged with industry, the empty prairie that seemed to stretch on

forever. Now and again, gently rolling hills and farmlands reminded them of home. The car had no radio, so again they sang their German songs. On September 5 they finally stopped moving.

Although the young sisters were used to sleeping on thick featherbeds, the sight of a convent room filled with thin cots delighted them. For the first time in ten nights, their beds would not be moving under them. Tired as they were, however, they lay awake, their minds racing, long after the other sisters in the room had fallen asleep. As the convent filled with the Great Silence of the evening hours, they listened to the strange new American sounds outside the window until their excitement finally gave way to exhaustion.

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One of the two "German novices," as their American sisters called them, was Sister Maria, who had befriended me on my first visits to Elm Grove. Intrigued with the bits of her story that she told me, I began to reconstruct her history from the records carefully stored in the convent's archive. At Mankato I had made a discovery that was to have enormous consequences for The Nun Study: Nearly every sister's file included one or more autobiographies that she had written after joining the congregation.

The School Sisters of Notre Dame tradition of autobiography might be said to have begun with Mother Caroline Freiss, the first leader of the American

sisters. During the five decades she spent traveling through the young nation, she recorded her journeys in extensive journals and hundreds of letters. Her writing is vivid with feeling and telling detail; whether she was documenting the evils of slavery or recounting her narrow escape from a Mississippi steamer that exploded in midriver, she displayed a true gift for storytelling.

This said, the congregation's records do not explain why, on September 22, 1930, Mother Mary Stanislaus Kostka, the Superior for North America, sent a letter to all the convents requesting that each novice write an autobiography before she took her vows. The letter called for a short sketch of their life:

This account should not contain more than two to three hundred words and should be written on a single sheet of paper... Include place of birth, parentage, interesting and edifying events of childhood, schools attended, influences that led to the convent, religious life, and outstanding events.

Since there are earlier autobiographies on file, Mother Mary Stanislaus may have recognized a legacy in the making. She may also have reasoned that the novices' autobiographies would give her insight into the background the young sisters brought to the work ahead of them. Once after I described these autobiographies at a seminar, a psychiatrist approached me and said, "I'll bet the autobiographies were an attempt to assess the younger sisters' mental abilities and aptitudes. I think the mother superior was really acting like a neuropsychologist." In 1930, standardized intelligence and personality testing

was still in the future, and, of course, even today many high school seniors agonize over personal essays on their college entrance applications.

There were hundreds of autobiographies in Milwaukee alone, most handwritten in the graceful script inculcated by generations of teaching nuns. Not only could I reconstruct a sister's educational and medical history from the records kept by the congregation, but I could glimpse her childhood and the early influences that had shaped her mind and personality. As I read Maria's autobiography, written in 1938, her early life came into focus in a series of vivid snapshots.

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On January 30, 1913, a tailor's wife in an ancient Bavarian town gave birth to twin girls. The babies were so fragile that they were baptized that same night in a private ceremony at the parish church. Baby Johanna would grow up to become Sister Maria. Her sister Magdalen died before the next day dawned. Johanna's parents later would say that her lively disposition had taken too much life from her twin.

Young Johanna's rambunctious nature earned her the nickname Rumpela – which means something like “whirlwind.” In one of her escapades she was returning from an errand for her father with her cousin Heinz riding in the delivery cart. She pushed the cart so hard that he lost his grip, sailed into the bushes, and broke his leg. At six she entered a grade school conducted by the

School Sisters of Notre Dame and promptly announced that she, too, would become a nun. In her autobiography Sister Maria recalled, "Nobody would believe me." "You have enough life for two boys!" her teacher said to her one day.

Sister Maria described the years growing up with her three sisters and two brothers as "very happy," and the presence of the Church in her life became "more firm" after she took her first communion at the age of ten. When she turned thirteen, she read the autobiography of St. Therese of Lisieux, a French Carmelite nun who was called "the Little Flower" and the patroness of the missions. "Like many others I dreamt very often that, when I was grown-up, I would go to Africa to teach the children there," Sister Maria's own autobiography explained.

Later that year, Johanna moved to Weichs, a city near Munich, to attend the teacher training school conducted by the School Sisters of Notre Dame. But her life soon took a dramatic turn for the worse. Her father, a veteran of the Great War, became gravely ill. His illness forced Johanna's mother to take complete responsibility both for the family business and for the children still at home. Her father suffered for the next four years, which "broke the strong constitution of my mother." By the time he died in 1930, Johanna's mother had herself become ill and would become more and more incapacitated until her death four years later.

Johanna continued with her training as a teacher and a nun, and for more than two years she taught her own second- and third-grade class. Nevertheless, these hard times took their toll. "These sad events in our family... served to change my former liveliness into greater seriousness," her 1938 autobiography notes. Maria was an orphan when she boarded the Deutschland and stepped into the unknown.

"What gave you the courage to leave?" I once asked her. She replied, "I knew God would provide all that I needed in America."

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After Sister Maria's death I began using video clips of her mental examinations as part of the presentation I gave about the Nun Study at scientific conferences, colleges around the country, and community centers, where I could meet with people who cared for loved ones with Alzheimer's. For every audience, Sister Maria's image puts a real human face on Alzheimer's: While the videotapes show the progressive loss of her short-term memory and orientation in time and place, they also demonstrate that some of the most beautiful parts of her brain and mind were still intact. Regardless of her mental and physical difficulties, she remained very much human.

In the fall of 1997, I was giving such a lecture at Mount Mary, the Milwaukee college owned by the School Sisters of Notre Dame. Because Sister Dolores Rauch was both a participant in the Nun Study and a professor at the

college, she was asked to greet me before my presentation. As was usual with the sisters, she was extremely polite and affable, but it was the energy of her intelligence that impressed me the most. She looked directly in my eyes as we spoke, and the wheels in her head seemed to turn with deliberate precision with every question I posed to her.

After I finished my talk, Sister Dolores approached the lectern with an excited look on her face.

“Dr. Snowdon, I was the other nun!” she said.

“Excuse me?” I said.

“You see, when I heard you talk about Sister Maria, I thought to myself, ‘Oh, my goodness! I was the other sister who came with Maria from Germany!’”

Her words took a second to register. During all of our conversations, Sister Maria had never told me the name of her traveling companion. Now here she was before me, a participant in the Nun Study. I was stunned at the good fortune of this discovery. Even though, as an epidemiologist, my focus is on comparing large groups, I found it irresistible to trace the parallel lives of Sisters Maria and Dolores. It was like finding the long-lost survivor of a car crash who could tell me the reasons she survived and her fellow passenger did not.

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Like Sister Maria, Sister Dolores was born in Bavaria, and her childhood was shaped by the Great War. Her father, too, was a veteran, and since Dolores (or



Barbara, as she was christened) was born in 1916, while he was still in military service, her mother teased her by telling her she had inherited his warlike qualities.

Despite the hardships of war and its aftermath, Barbara's recollections of her life growing up had an almost romantic quality. While her father was fighting in Bulgaria, her mother had kept the family farm running with the help of a few maids and a prisoner of war. The Rauch family lived in an ancient stone farmhouse, and sometimes hungry strangers would come to the door begging. Her mother always found food to share. Barbara still remembered the price of admission at the first puppet show she attended: one egg.

As the sixth of eight children, Barbara held her own among her siblings and nearby cousins. She was proud of her status as a tomboy. "I was the only girl the schoolboys invited to go sledding," she once told me with obvious pleasure. Her mother referred to Barbara as her "second son."

Again like Maria, Barbara decided on her profession on the first day she attended school. "I am going to be a teacher," she declared. Later that year Barbara would become captivated by a missionary priest who visited her class. The priest enthralled seven-year-old Barbara with his tales of the far-off continent of Africa, where children had no schools or clothes and often went hungry. After he finished his talk, he fished through his bag and removed a figurine of a boy, his hands clasped in prayer, kneeling on a green painted box.

“This African child is praying for help,” the missionary explained. “Would you like to assist God to answer his prayer?”

Barbara nodded, along with her thirty other classmates. The children lined up, each holding the coin their teacher had told them to bring for missions day, and made a procession to the collection box. Barbara watched, fascinated, as the boy's head bobbed a thank-you for every coin dropped through the slot at his knees. From that moment she began to dream of going to Africa one day as a missionary teacher.

Barbara excelled in school, and her third-grade teacher often asked for her help with the younger children, calling her *Vizelehrerin*, or assistant teacher. One winter evening the assistant pastor of their parish stopped by the farmhouse. Barbara and her siblings had taken over the large kitchen table to do their homework. Her mother sat in a rocker, a new baby in her arms.

“Mrs. Rauch, you have seven daughters,” the young pastor said. “Have you thought about letting one of them enter the convent?”

“This not for me to decide,” Mrs. Rauch said. “The decision is their own.”

“I am not going to the convent!” declared the eldest daughter, marching out of the room.

“I’m not, either,” insisted the next in line, who also left the room, followed by the third.

Barbara, barely nine, watched in wonder. The pastor turned to her. "What about you?" he asked.

"I'm going to be a teacher," Barbara said resolutely.

"But you could become a sister teacher," the pastor suggested.

"How can I become a sister teacher?" she replied. "I've never even seen a sister."

Barbara forgot about the conversation until shortly before the beginning of the next school year, when her mother received a letter from the government approving Barbara's transfer to a school taught by the School Sisters of Notre Dame. Her mother seems to have had a remarkable respect for her daughters' independence, and she stressed that Barbara did not have to make the change. "But it is a better school, and you will learn more."

"Then I'll go," Barbara immediately replied.

Although Barbara had to rise at five-thirty each morning and walk nearly an hour through the forest to reach her new school and attend High Mass, she loved the beauty and peace of the woods, and her religious conviction grew. The next year she came home from school one day and announced to her parents: "I love school, I love learning, and I love Jesus. I want to be a priest." But not just any type of priest. She wanted to be a Jesuit, free to spend the rest of her life immersed in both intellectual and spiritual pursuits.

At the end of seventh grade, with the help of her pastor, she filled out an application to study at an institute run by the Holy Ghost Sisters, a congregation with missions in Africa. To Barbara's dismay, her father put his foot down. "Child," he said, "you are too young to make such a decision. We love you too much to let you go so far away. Besides, there is enough work to do right here in Germany--if you *must* become a sister."

Again at her pastor's suggestion, Barbara enrolled in a six-year combined high school and college program at a boarding school conducted by the School Sisters of Notre Dame. Barbara still did not intend to join the congregation; she was after a teaching credential. Yet she developed a profound respect for the spirit of the sisters and their devotion to education. Now she faced a painful dilemma: If she joined the congregation, she would have to abandon her dream of Africa, since the sisters did not work on that continent.

Barbara sought the advice of her confessor. "It seems to me that God is calling you to the School Sisters of Notre Dame," he said. "If and when God wants you to serve in Africa, you will receive an unmistakable sign." So in 1936 Barbara Rauch became a postulant with the School Sisters of Notre Dame.

Her first assignment was as assistant to the principal at a public elementary school run by the congregation. As part of her continuing training, she had to attend government-run workshops once a month. At one of these meetings near the end of the 1937 school year, the supervisor read an official

letter that advised all would-be teachers to drop their affiliations with religious communities and join the Nazi party.

“The letter was pure Nazi propaganda, dripping with venom and directed toward religion in general and sisters in particular,” Sister Dolores wrote in her lengthy and richly detailed memoirs, which she shared with me. “Anger, frustration, and fear shook my very being. I took the long way back to the convent. Walking through the quiet park area, my mind cleared and my heart vowed, ‘You will never get me into your ranks, no matter what the consequences might be.’”

Barbara went to her father and asked whether she could accept the offer made by the American provinces to take in German members of the congregation who wanted to emigrate. Absolutely not, he said. Although he despised the Nazi regime, Barbara’s father, like many Germans, believed that Hitler would never last. A few weeks later, a pastor in a neighboring town who had spoken out against the Nazis disappeared. “I really should have let her go,” Barbara’s father confided to her mother, who promptly passed on the news of his change of heart.

On August 9, two weeks before she boarded the *Deutschland* for the United States, Barbara was received as a novice and took the religious name of Dolores, with all its overtones of suffering. Her parents came to the ceremony. She would never see them again.

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After they arrived in America, Sisters Maria and Dolores spent their novitiate year at the Milwaukee motherhouse. Located in the center of the city, it occupied an entire square city block and was designed much like the Munich motherhouse, with offices, living quarters, and a chapel surrounding an immaculate inner courtyard, which offered a cloisterlike seclusion. But the motherhouse could not shield the sisters entirely from the social upheaval of the city. Anti-German sentiment permeated the United States, as Hitler had just taken the Sudetenland and would soon be invading Poland. Many Milwaukeeans of German descent stopped conversing in their native tongue; although many of the sisters at the motherhouse spoke German, they also made an effort to use English at all times.

This situation particularly affected Sister Maria, because she knew very little English and spoke with a heavy accent. Sister Dolores, on the other hand, had studied English for five years in Germany. Her biggest problem was her British accent and vocabulary. "It took months before I could comprehend jokes," she told me.

The German sisters took classes together, including one with a speech therapist to help them master the subtleties of American English. Their report cards reveal that both women had sharp intellects, with their near-identical grades ranging from the high 80s to the high 90s. Yet their personalities differed

dramatically, and they began to drift apart. A walk they took together stood out in Sister Dolores' mind decades later. "Dolores, you're always hopping all over the place," Sister Maria reprimanded. "Maria was very, very sedate," Sister Dolores recalled. "She was controlled and private." The girl nicknamed Rumpela seemed to have vanished.

Their autobiographies also strike a different note. Sister Maria's concludes with a dutiful account of her new life in America: "There amid dear companions and under the direction of kind Superiors we are preparing for our future occupation – to be teachers of Catholic Youth for the salvation of their immortal souls." Sister Dolores' essay ends in something close to poetry: "Dependence upon grace, I might call my former life; thanksgiving for this grace, I will choose as a motto for my future."

In August 1938 both sisters professed their first vows. The following month they received their "bluebirds," or teaching assignments. Then their lives split apart, and they would follow very different paths for the next half century.

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Ill health dogged Sister Maria from the start.

Her first assignment was to teach a second-grade class at St. Joseph's School in Appleton, Wisconsin. Her vow of obedience meant that she accepted it without question, but the isolation and stress of her first year in America had taken its toll. On her first day of school Sister Maria suffered a nervous

breakdown, and by all accounts it appeared to be an episode of severe depression.

At that time, a separate building in a wooded area of the Elm Grove property was set aside to care for sisters suffering with any kind of mental illness. Sister Maria stayed here for the next two months, during which time another German sister helped to bring her out of her shell.

She was able to remain at her next assignment--again a second-grade class--for four years, until a serious tooth infection in 1943 kept her from work for six months. Five years later she contracted tuberculosis and was treated at the TB sanatorium at Elm Grove, staying this time for four years. Upon her recovery Sister Maria returned to teaching, but she quickly had another nervous breakdown. After a psychiatrist advised her not to teach, she took a job in the tapestry room at the Milwaukee motherhouse, where she made and mended the priests' liturgical garments or vestments.

This was her assignment for the remainder of her working life, whether at the original motherhouse in Milwaukee or, after 1954, at its new location in Mequon. Her tuberculosis recurred, and she had two lung operations with long convalescences. She considered 1963 a red letter year, as the province sent her to Rome and then to Germany, where she visited relatives for the first time since 1937. She retired from her seamstress job at Mequon in 1982.



When I met Sister Maria in 1991, she lived at the Elm Grove retirement community. I knew from her first mental exam, in which she could only recall four of ten words, that she had problems. But Rumpela seems to have returned a bit to lighten her old age, and Maria was so witty and charming that her rapid decline during the next few years surprised and saddened me. In the last test we gave her, nine months before her death on January 26, 1996, she could not even repeat the phrase “no ifs, ands, or buts.” I hardly recognized this woman whose company I had grown to cherish. And she showed no signs of remembering me.

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As I traced Sister Dolores’ history, I was struck by how much her life had diverged from Sister Maria’s.

Determined to prove herself in her new homeland, she had thrown herself into her studies and into her job as a teacher. But she too struggled with loneliness. Throughout the war, her only contact with her family was through the Red Cross, which twice a year would forward a letter containing no more than twenty-five words. One letter contained the news that her beloved only brother had died in combat at the Russian front. Then in 1944 the Red Cross notified her of her mother’s death—which had taken place a year earlier. These losses devastated Dolores, but she viewed them as God’s will. Her ability to go on strengthened her belief that with God’s help she could survive anything.

During the next two decades, Sister Dolores was assigned as a teacher and then a principal to the congregation's schools scattered throughout Wisconsin. Like most sisters, she taught nine months a year and attended college during the summers. She earned her bachelor's degree in 1945, when she was twenty-nine years old, and her master's degree in 1960, at age forty-four.

When she was forty-seven years old, Sister Dolores became a professor of elementary education at Mount Mary College in Milwaukee. Her friends predicted that she was "stuck for life." But then the college lost its geography instructor, and the president asked Dolores whether she wanted to train to teach the subject. Excited by the idea of exploring a new field, she went back to school again, earning an M.A. in geography at fifty-one, and a Ph.D. at fifty-five.

By the early 1970s, the School Sisters of Notre Dame had extended their work to Africa. *That's where I should be*, Sister Dolores told herself. She began speaking about her dream with her friends. "That's my continent," she would tell them. "I have been waiting to go there since I was knee-high." But Sister Dolores reluctantly agreed with the reaction that typically greeted her: She was too old.

Then in June 1983, at age sixty-six, Sister Dolores took part in a religious renewal program at the congregation's world headquarters in Rome, where she attended a presentation by a sister who had been working in Africa. As she was leaving, Sister Dolores happened to pass Sister Mary Margaret Johanning, the

congregation's general superior. "That's my continent!" Sister Dolores blurted out as she walked by.

"You want to go to Africa?" Sister Mary Margaret called after her. "Are you serious?"

Sister Dolores turned back. "I have always wanted to serve in Africa, but it is too late now," she said. "I am too old."

"That is not necessarily so," Sister Mary Margaret replied. "Think and pray about what you would do if you were given a chance to work in Africa. I will see you tomorrow about your answer."

In Sister Dolores' memoir, she described how the possibility of working in Africa suddenly overwhelmed her. "I thought of my work at the college, which I loved, my friends, my family, my health situation--of letting go of all I had built up during a lifetime," she wrote. "The prospect of having to start all over again in a new land suddenly seemed frighteningly unrealistic. My fragile self cried out in self-pity, 'I am too old; it is too late!'" But then she saw a glimmer of light in her imagination that grew brighter and brighter. God, she concluded, was sending her the sign that her confessor had spoke of forty-eight years earlier.

Sister Dolores soon received word from Rome that she was being assigned to a post in Kenya. "It was like winning the lottery," she said.

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Sister Dolores arrived in Kenya in 1984--two years after Sister Maria had retired from her job in the tapestry room. The local bishop dispatched her to South Nyanza, near the northeastern edge of Lake Victoria. He asked her to study the starvation that was occurring in the region and to devise a remedial program that the local residents could maintain on their own. After assessing the situation, Sister Dolores realized that the villagers had overharvested the trees without planting new ones and that this, combined with recent climate changes, had caused desertifications and crop failures.

To combat this problem, Sister Dolores started a reforestation project called Community Mobilization Against Desertification. She kicked off her fund-raising drive at the Ford Foundation office in Nairobi, refusing to leave until she saw a project officer. The Ford Foundation had never funded a project in Kenya run by a religious group, but after Sister Dolores doggedly pursued them for two years, the philanthropy came through with money for her endeavor.

In 1992 Sister Dolores, now aged seventy-six, returned to Mount Mary College for a sabbatical year, which she spent teaching herself about computers. That year she joined the Nun Study and scored high marks on her first mental examination.

Sister Dolores was not available for her second examination in 1994, as she had returned to Kenya to steward the reforestation program. My colleagues and I debated whether to drop her from the study, because our protocol required

complete records. However, we realized that it would have been ridiculous to eliminate someone from the study for being too able bodied and busy. Sister Dolores became the first nun that we allowed to skip an exam.

In 1996, Sister Dolores, then eighty years old, said goodbye to Kenya. South Nyanza had become greener, and the farmers had developed their own programs to solve their common problems. Despite all that remained to be done, Sister Dolores had lived out her childhood dream of helping Africa--one that she had all but conceded would never be fulfilled.

After she returned, she took her second Nun Study examination and had a near-perfect score. In stark contrast, 1996 was the year that Sister Maria, weakened by Alzheimer's, contracted pneumonia and died within a few days.

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Many people still believe that, as we age, our minds wear out, and that if we live long enough, we will inevitably become demented. This is a myth. Aging does increase the risk of developing Alzheimer's, which helps explain why Sister Maria did not suffer from the disease until her eighth decade. But clearly Sister Dolores' mind did not deteriorate after eighty years of use. What, then, explains their different fates?

In the world of epidemiologists, anecdotal evidence—like the parallel lives of Sisters Maria and Dolores—is deeply suspect. Stories about individuals can make for persuasive tales, yet not reflect reality. The more we know about

Alzheimer's, the more complex and multidimensional it seems, with roots that go back to childhood. Only studying large groups can help untangle all these influences.

Such studies suggest a long list of factors on which we might compare Sisters Maria and Dolores. For example, Jim Mortimer and other researchers have shown that head trauma is a risk factor for Alzheimer's – but this factor is missing from both sisters' histories, as far as we know. We are also limited in our ability to trace genetic influences. Neither Sister Maria's nor Sister Dolores' parents developed Alzheimer's disease, but this may simply reflect the fact that they died relatively young. And while a few Alzheimer's-related genes have been identified, current thinking is that a dozen or more – perhaps many more – may work in tandem to increase either susceptibility or resistance to Alzheimer's.

Certainly being female increased the risk for both women. Women as a group live longer than men, but this does not explain the entire difference in risk. It appears that many men who live longer than average for their gender are "hardy" in some way – they are unusually resistant to many diseases, including Alzheimer's. In the general population of women, differences in reproductive history and in the use of estrogen after menopause are thought to affect the risk of Alzheimer's, but, again, these factors do not apply to Sisters Maria and Dolores. The Nun Study has not addressed the question of whether estrogen replacement reduces the risk of Alzheimer's, because almost none of the

participants used it. We, like most clinicians, await the results of ongoing studies now being conducted by the National Institutes of Health, particularly the Women's Health Initiative, a large-scale clinical trial. Within the next few years, this study should provide the best available data on whether estrogen replacement can reduce the development of memory impairments and dementia in women sixty-five and older.

One clear difference between Sisters Maria and Dolores is in education. Our own pilot study found a clear link between higher education and healthy function in later life. And most of the large studies throughout the world have found links between lower levels of education and Alzheimer's. Although the two nuns received nearly identical education through their early twenties, their experiences diverged sharply after their first year in the United States. Sister Maria worked in elementary schools off and on, but spent most of her career as a seamstress. Her hopes of completing a master's degree were derailed by her many bouts of illness. Sister Dolores moved up the academic ladder throughout her career, from elementary school teacher to principal to college professor. Along the way she earned a bachelor's degree, two master's degrees, and a Ph.D. These differences in education dramatically influenced how they lived their lives, but they may have had little, if any, effect on their Alzheimer's risk. Most studies show increased risk only for those without any college education. (Nun Study

conclusions are actually limited in this regard because we have so few participants at lower educational levels.)

Another pronounced difference between the two sisters was in their family upbringing and environment. I was curious to know more about Sister Maria's family, and in 1999, at my request, Sister Dolores contacted a nephew of Sister Maria's who lived in Germany. He had gotten to know his aunt when she visited in 1963, and he turned out to be a wonderful source of family lore.

The account he later sent me, via Sister Dolores, was much darker than Sister Maria's youthful autobiography. "Maria herself," he wrote, "has always emphasized that they had a hard childhood and that her father was very strict, especially after his return from World War I with shattered nerves." His uncle Heinz (the cousin whose leg Sister Maria accidentally broke) had told him stories. While Heinz was recovering from his broken leg, a neighbor brought him a cake. This enraged Sister Maria's father for some reason, and he threw the cake down the stairs. Uncle Heinz also had a story about Sister Maria's birth. According to him, her mother actually prayed that God would take one of her twin daughters, so overwhelmed was she by having two newborns to care for simultaneously. (I recalled with shock that her parents had told young Johanna that her own liveliness had taken "too much life" from her sister.)



These are only snapshots, of course, but they form a sharp contrast to Sister Dolores' family, where her mother seemed to enjoy her large brood, and her father tried to keep his daughter close – until her safety was threatened.

Such family circumstances may have played a role in Sister Maria's depression, which was evident soon after she arrived in America as a young novice, as well as later in her life. Among older adults, depression occurs more often in Alzheimer's patients than in healthy controls. (Depending on which study you believe, between 15 and 40 percent of Alzheimer's patients are depressed.) However, the nature of the link between depression and Alzheimer's is unclear. Is depression a risk factor for Alzheimer's? Or is depression an emotional response to the losses caused by Alzheimer's?

Several major studies suggest that depression predates the onset of Alzheimer's and constitutes a distinct risk factor. One analysis compared people with Alzheimer's with a control group of people who did not develop the disease. After combining data from four studies, they concluded that people who had been depressed before being diagnosed with Alzheimer's had a 1.8 times higher risk of developing the disease. This near doubling of risk held up even when the researchers evaluated people whose history of depression began ten years or more before their Alzheimer's was diagnosed.

There is no doubt that treating depression in Alzheimer's patients can result in improvements in their mental, social, and physical functioning. And

since depression is also an important risk factor for coronary heart disease and other chronic diseases, it may have played an additional role in Sister Maria's premature death – premature at least by the standards of our long-lived nuns.

We may never know the precise reasons why Sister Maria developed Alzheimer's disease and Sister Dolores was spared. But since both sisters joined the Nun Study, their histories are now part of a powerful database created to address these perplexing questions in detail. As the Nun Study began to peer into the brain itself, entirely new landscapes came into focus – and we discovered that we still had surprising things to learn from Sister Maria.