

News, views and comments

Twins' Continuing Tales: New Evidence Reshapes Thinking/ Appreciation and Recognition: Honoring Colleagues, Honoring Twins; Remembering Colleagues, Remembering Twins / In the Media: Ukrainian Twins in Wartime; Twins Born in Different Years; Identical Twin Surrogate; A Quaternary Family; Abducted Twins in Serbia

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Abstract

Twin research proceeds at a rapid pace, with new findings constantly modifying our knowledge and thoughts about many issues. In the present article, this concept is applied to the writing of books and articles about twins, with special emphasis on the author's recent experience. My lead essay in most contributions to the News, Views and Comment section of this journal is usually followed by a review of current research findings; however, significant events necessitated a departure from this format. At this time, it is important to both honor and remember colleagues and twins, both past and present. The final entry in this article highlights media events that variously pose biological and social implications for our field. They include the hardships of Ukrainian twins during wartime; twins born in different years; identical twin surrogacy, a quaternary family and abducted twins in Serbia.

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Twins' Continuing Tales: New Evidence Reshapes Thinking

I have written seven books on twins, co-edited one collection and am currently writing two more books and co-editing another. The other day I glanced at the shelf where I keep these books and realized that new information could be added to each one, even those published as recently as 2018. That is because twin research and twin-related information progress swiftly, reshaping what we know and how we address various issues and problems. For example, we used to believe that delayed zygotic division was associated with a shared placenta and mirror-imaging effects. Now we think these features may be associated with unusual cellular events resulting from the splitting of the fertilized egg (Herranz, 2015; Segal, 2017). We also once believed that MZ twinning occurred only at random, but new discoveries suggest that identical twinning may be genetically influenced in some families (Beck et al., 2021; Hamamy et al., 2004; Segal, 2017). Most recently, researchers have determined that unique marks remain on the chromosomes of MZ twins, such that we can identify such individuals if it is suspected they were reared apart or for some other reason that seems significant (von Dongen et al., 2021).

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New findings about twins are fascinating. Unfortunately, there is usually a considerable lag in time between when an article, a book chapter or a full-length book is submitted for publication and when it appears in print. (Of course, studies published online or those covered on television and radio can be disseminated more swiftly.) The interval between submission and publication can extend for months, meaning that information does not immediately benefit twins and their families and cannot be used by scholars working in the field. In addition, media reports may appear without the psychological or medical detail needed for full understanding and appreciation of the material by readers. Another difficulty is that authors are often prevented from discussing findings before they are released since this might dampen their impact when they are fully reported. Presenting selected findings at conferences or at public lectures may offer solutions, although there are risks that an audience member may write or speak about them and fail to get the facts correct. This happened when journalists reported the so-called Mozart effect, the brief improvement in spatial ability by college students upon hearing a Mozart sonata — information was prematurely and inaccurately reported (Mehr et al., 2013).

My latest book, *Deliberately Divided: Inside the Controversial Study of Twins and Triplets Adopted Apart*, released in November of last year, may also require updating (Segal, 2021). Subsequent to its publication, I have received new material about various aspects of the study. In particular, I have heard from individuals with important questions and new knowledge.

In 2020, I had a conversation with Jen Wofford, one of Dr Viola W. Bernard's great-nieces and a former member of the now dissolved Viola W. Bernard Foundation. Recall that Dr Bernard

was the Columbia University psychiatric consultant to Louise Wise Services (LWS), the New York City adoption agency that separated twins in the 1960s. Bernard believed that twins were better off growing up apart. Specifically, she asserted that separating twins enabled them to develop a better sense of identity and avoided parental overburdening. Her justification was based on what she referred to as the literature of the times; however, a review of studies indicates that research supporting her view was nonexistent.

Jen is a monozygotic (MZ) twin and her thoughts about her great aunt and the study are included in the book. During our post-publication conversation in 2021, I learned that her mother, Joan (Bernard's niece), is also a twin. At age 3 or 4 years, Jen's mother was separated from her twin brother due to her parents' divorce and other unusual family circumstances. The twins were apart for long periods, even years, an arrangement in which Dr Bernard played a significant role. According to Jen, Bernard felt that both of these twins would gain from one-to-one parenting, compared with the shared parenting of most twins and near-in-age siblings. Jen noted that 'the idea of twin separation arose due to concerns about the mental health of Joan's brother, and the belief that each twin would develop better off apart than together. It was a common belief of that era that an intact family, with both a mother and a father, would provide the best outcome for children.'

Perhaps Joan's unusual family situation explains why Jen did not seem disturbed (as do most people) at the prospect of separating twins at birth. Having spoken at length to both Jen and her mother in 2020, as well as Jen's nontwin sister while researching *Deliberately Divided*, I was surprised that Joan's twinship had not been disclosed. Perhaps that is because the twins' time apart as children prevented them from becoming close as adults. After her parents' divorce, Joan was placed with an unfamiliar nanny whom she met on a train for the first time. The situation was traumatic for her at first so I wonder if being with her twin brother would have had a soothing effect. Joan remained with her nanny and the placement proved successful. Of course, outcomes from a single unusual case do not extend to all twins.

In *Deliberately Divided*, I noted that Bernard's separate rearing policy was applied only to adopted-away twins. However, Bernard never differentiated between twins raised by their biological parents and twins relinquished for adoption. If she truly believed that being raised apart from one's twin was optimal, then why didn't she advocate the practice widely? After all, parents make sacrifices for their children all the time . . . And if Dr Bernard believed that children do best when they are raised in a two-parent home, why did she not honor the wishes of the adoptive parents who specifically requested twins?

I am an advocate for keeping twins together. I also realize that, in very rare circumstances, separating twins could be a viable solution. In my book, *Entwined Lives: Twins and What They Tell Us About Human Behavior* (Segal, 2000), I cited a case in which a young dizygotic (DZ) female twin had a cotwin who suffered from severe mental retardation and growth delay. At age 8, the twins spent minimal time together and family activities were often curtailed when they did, due to the affected twin's needs. During her sister's occasional school visits, the healthy twin felt embarrassed when teachers emphasized their similarities. The twins' parents had divorced, and separate custody of the twins was eventually decided by the court. I concurred in that rare case, but I believe every twin pair is unique and must be handled individually; some twins with handicapped cotwins do very well together. The affected twin in this case passed away 2 years later at age 10.

I also spoke with a fraternal male twin who had been adopted from LWS together with his brother in 1978. Their biological mother who gave them up for adoption insisted that they be placed together. Perhaps the adoption staff agreed because the study was winding down by then — the last assessment took place in 1979 or 1980, and the last twin pair separation occurred in 1969. However, as I reveal in the book, some twins were separated even when their biological mothers wanted to keep them together; most, if not all, of these mothers were not given a choice.

Two more contacts are of interest. One afternoon in February 2022, I received a call from a woman who was raised apart from her twin sister. She had learned this from her father who indicated that he and his wife would have been willing to accept both twins. The woman grew up on Long Island as the adopted child of Jewish parents who were active in a number of Jewish causes in the New York City area. Born in 1965, she wondered if her situation might be connected LWS, given the agency's 1960s' twin separation policy and the study of separated twins, conducted in conjunction with Dr Peter Neubauer at the Jewish Board of Guardians. After all, LWS was the preeminent agency for Jewish couples wishing to adopt Jewish babies. The woman recalls several sessions during which she completed the Rorschach Inkblot Test and spatial tasks involving blocks, tests administered when she was between the ages of 4 and 8 years; these tests were given to the twin study participants, as I documented in the book. The woman also believed that she and her twin sister are fraternal, although when she relocated to another part of Long Island, she was often confused for somebody else.

The information she provided makes it somewhat plausible that LWS could have been involved except for one detail. However, she was born in Texas; her parents had tried to adopt a child in New York City but were turned down. Interestingly, when she tried to obtain a passport, she was told that there was no record of her birth in the state of Texas. There is evidence that LWS functioned across state lines, in that one of the separated twins I wrote about might have been placed in Illinois had it not been for the potential difficulties posed by the periodic testing schedule followed for the twin study.

In yet another case, a California woman contacted me to inquire as to whether her father may have been a separated twin. He was born in Chicago, not in New York, but was adopted by an affluent Jewish family living in the New York area. She wanted to know if LWS had separated twins from other states. I told her I was unsure, but I did mention that one twin might have been placed out of state (in Illinois, in fact) if not for testing considerations (see above).

Deliberately Divided, the two documentary films, *Three Identical Strangers* (Wardle, 2018) and *The Twinning Reaction* (Shinseki, 2017), as well as various newspaper and magazine articles, have made some readers (especially Jewish adults adopted in the 1960s with ties to New York City) wonder if they might have been placed apart by LWS. Michele Mordkoff, one of the separated twins who was living in New Jersey, never suspected she was a twin until she learned about the film *Three Identical Strangers*. Having been adopted from LWS in 1964, she was motivated to add her DNA sample to 23andMe and Ancestry.com. It turned out that she had a fraternal twin sister, Allison Kanter, living in California. They enjoyed nearly three wonderful years of close companionship until Michele's untimely death in 2021.

It is likely that other adult children have wondered if their parents (who are adoptees) may have been twins whose adoptions were decided by LWS, as in the case cited above. The chances may

be slim, but finding out the truth is important to them. The twin data and related materials have been archived at Yale University, not to be unsealed until 2065. Hopefully, exceptions regarding their release can be made in the case of possible twins and their family members who cannot tolerate the uncertainty surrounding their birth histories and family backgrounds.

Appreciation and Recognition

Honoring Colleagues

The contributions of our twin research colleagues are highly appreciated. It is especially gratifying when their accomplishments are honored publicly, beyond the borders of our field. Professor Jaakko Kaprio, of the Institute for Molecular Medicine Finland FIMM, HiLIFE and University of Helsinki, was awarded one of three prestigious prizes from the Finnish Cultural Foundation. The prize of 35,000 euros (approximately 35,000 USD) is given for significant cultural achievement; in Kaprio's case this prize was awarded for his research on nature–nurture and for his work as a researcher of twins.

It is also a pleasure to acknowledge Professor Dorret I. Boomsma, of the Netherlands Twin Register and Department of Biological Psychology, Vrije Universiteit, Amsterdam, for receiving an Honorary Doctorate from the University of Helsinki. Only 10 scholars, representing the USA, UK, South America, Australia, Europe and Canada, were so recognized by the university's Faculty of Medicine.

Honoring Twins

It is my personal pleasure to recognize MZA twin, William Cañas Velasco, for earning his law degree in February 2022 from La Corporación Universitaria de Ciencia Y Desarrollo (The University Corporation for Science and Development), in Colombia, South America. William was one of four MZ male twins raised apart (MZA) whose lives changed dramatically when he was inadvertently switched with an MZ twin from a different pair while in the premature infant unit of the Hospital Materno Infantil, in Bogotá. William had been born in Bogotá but, due to the switch, he was taken approximately 150 miles north to be raised by unrelated parents, alongside several unrelated siblings, including a 'twin brother'. William's new home was situated in the rural town of La Paz. It was a structure lacking electricity and running water. He did not advance beyond the fifth grade, but his motivation to obtain an education resulted in his eventually earning a high school equivalency (GED) degree (Segal & Montoya, 2018). It is to William's great credit and the support of the three twin brothers also affected by the switch that he is now an attorney.

The exchange of William and Carlos (the twin in the pair that was originally from La Paz) was discovered in 2014 when the twins were 25 years of age. It happened after William had moved to Bogotá and was mistaken for his twin brother, Jorge. A series of inquiries by the twins and their friends regarding birth hospitals and other early life history events revealed that the four young men had been living as two pairs of alleged DZ twins when the pair members were unrelated biologically. In fact, they were part of a rare type of virtual twin (VT) set, composed of same-age unrelated siblings — most VTs are aware of their relationship to one another, but the two unrelated pairs in this case believed they were DZ twins (Segal et al., 2021). DNA testing eventually confirmed the two MZ twinships.

Remembering Colleagues

It is with great sadness that the twin research community, family and friends acknowledge the loss of Professor Lindon J. Eaves, a faculty member at Virginia Commonwealth University (Hostetler, 2022). Eaves was both a professor and a priest. He passed away unexpectedly on March 7, 2022. Eaves' contributions to the fields of behavioral genetics and epidemiology are seminal. Too numerous to name (he published over 500 scholarly papers), they include advances in statistical methods, bases of family relationships, factors affecting body composition, underpinnings of religiosity and associations among genes, personality and culture. I did not work with Lindon, but in the 1980s, I was privileged to invite him to present a seminar at the University of Minnesota when I was a postdoctoral fellow, and he did not disappoint. I will never forget his repeated (and apparently favorite) phrase that referenced the way in which genes are transmitted from parent to child — 'the slings and arrows of outrageous fortune' — a line from Shakespeare's play, *Hamlet*. Colleagues and students who worked closely with Dr Eaves have other more personal memories; many of his former students and colleagues shared them during a Zoom session held March 16.

Remembering Twins

There was great excitement at the Minnesota Study of Twins Reared Apart when MZA twin firefighters met one another by chance in the fall 1985. Gerald (Jerry) Levey and Mark Newman grew up about 200 miles apart — Jerry on Long Island and Mark in New Jersey — and were occasionally mistaken for one another. It never occurred to them or their families that these incidents meant anything other than coincidence. They finally met at the age of 32, at which time both twins were living, working, and fighting fires in different New Jersey cities. Then met because Jerry had attended a volunteer firemen's convention in September 1985, where one of Mark's friends, Jimmy Tedesco, was struck by Jerry's extraordinary resemblance to his friend Mark — even while Jerry was approximately 90 pounds lighter. Tedesco devised a plan to bring the twins together, and it was then that Mark and Jerry discovered their twinship, as well as their remarkable behavioral and physical similarities. For example, both twins threw their head back when they laughed, held a pinky finger under a can of beer while drinking (only Budweiser), always carried a knife, and attached huge key rings to their belts that were fastened with unusually large buckles (Segal, 2005/2007).

Jerry and Mark grew close quite quickly, although their relationship dissolved several years later. Following Jerry's marriage (a source of tension between them) and Mark's subsequent move to Arizona, the twins stopped communicating and never resumed their relationship in any form. In early February 2022, Mark's brother, Alan, called me to say that Mark had passed away. I immediately telephoned Jerry, and shortly thereafter I discovered a message he had left on Facebook: 'For 67 years two of me walked this earth now there's just me RIP my twin Ex-Chief Mark Newman Paramus Fire Dept.'

The identical Bogdanoff twins, Igor and Grichka, passed away on January 3, 2022, at age 72 (Risen, 2022). These French twins were known as television hosts of *Temps X (Time X)*, a program that combined science, science fiction and various types of gadgets. The twins were also famous for their use of extreme procedures that significantly modified their facial appearance. The twins eventually obtained doctoral degrees, Grichka in mathematics and Igor in physics, and published papers aimed at explaining the origins of

the Earth; however, their science was seriously questioned. The twins passed away just days apart from COVID-19 infection, although they claimed to have been vaccinated. More about their lives is available at <https://www.nytimes.com/2022/01/07/world/europe/grichka-and-igor-bogdanoff-dead.html?referringSource=articleShare>.

In the Media

Ukrainian Twins in Wartime

Twin boys, Lenny and Moishe Spector, were born prematurely in Ukraine on February 25, following a surrogate pregnancy (Crane, 2022). It was the day after Putin had ordered Russian troops to invade Ukraine. The infants were transported from the capital city of Kyiv to the Polish border by members of *Project Dynamo* in a mission aptly named ‘Operation Gemini’. (Project Dynamo is a group of veterans and civilians that for the last 20 years has been dedicated to evacuating Americans living in dangerous locations; see Project Dynamo.org.) They arrived in Poland on March 7, where their biological father was waiting for them. The twins’ mother planned to travel from her home in Chicago to join her husband and twin infants in Poland before the family returns to the USA.

Surrogacy has been a thriving business in Ukraine, with women earning 15,000 USD for carrying someone else’s child (Kramer & Varenikova, 2022). Childless couples from around the world have taken advantage of this service. A couple from France donated embryos to a Ukrainian woman who was in her 31st week of a twin pregnancy as of March 12. The prospective parents managed to travel to Ukraine and are living with the surrogate and her family in Lviv. Biological parents must be present to pick up their children and to confirm their citizenship.

Given the ongoing war conditions, 19 newborns delivered by surrogates are being cared for by a team of devoted nannies in an underground nursery in Kyiv. It is uncertain if, and when, the babies’ biological parents will be able to travel to Ukraine to claim them. The nursery is now safe and well-stocked, but how long that can last is uncertain.

Twins Born in Different Years

It is rare for twins to be born on different days, but opposite-sex twins, Aylin and Alfredo Trujillo, from California, arrived 15 min apart and in different years — 2021 and 2022 (Weber, 2022). Alfredo was born first at 11:45 pm and Aylin followed at approximately midnight. It is uncertain if this difference will complicate their time of school entry or other life history events. I recall that a DZ reared-apart twin who participated in the Minnesota Study of Twins Reared Apart did not know that she and her twin sister had been born on different days and in different months, just like Aylin and Alfredo, but not in different years. The twin who searched for her sister did not know that their birthdays differed, so finding her sister was delayed because she was looking for someone with the same date of birth.

Identical Twin Surrogate

Identical twins, Brittany and Cynthia Daniel, co-starred in the 1994–1997 television series, *Sweet Valley High* (Nolasco, 2022). In October 2021, Brittany announced that she had given birth to her daughter Hope using her sister’s egg, a decision prompted by Brittany’s compromised health. The advantage of using an egg donated by Cynthia is that it might just as easily have been released

by Brittany because they are genetically identical. Cynthia claims to feel like the baby’s aunt — she is, but she is also her ‘genetic mother’, a term that describes some relationships in the entry that follows.

In 2007, I documented a related case in which an identical female twin delivered two children for her sister on two different occasions, due to her sister’s health considerations (Segal, 2005/2007). In that situation, the healthy twin was impregnated with her brother-in-law’s sperm, so the children were truly related to their biological parents.

A Quaternary Family

Briana and Brittany are identical twins married to identical twins Josh and Jeremy Salyers, respectively (Raiken, 2022). The four twins live in the same home. Both couples recently became the parents of boys, Jett (Brittany and Josh) and Jax (Briana and Jeremy), who look remarkably alike. The physical resemblance of their children is not surprising, given that their parents are genetically interchangeable. It is also not surprising that each father regards his nephew as his own son — which he is in genetic terms. Moreover, the boys, in addition to being legal first cousins, are genetically equivalent to full siblings. Families like this are categorized as ‘quaternary’.

Abducted Twins in Serbia

A Hungarian journalist contacted the presidents of the International Society for Twin Studies (ISTS), David and Adam Tárnoki, regarding a case of twin girls who may have been abducted from a maternity hospital and adopted abroad. The twins would have been born in August 1996 to mother, Deli Aranka. Aranka never believed that her twins had died as she had been told by hospital personnel. When she received an official notice in 2014 stating that one of her twins had reached adulthood she began to investigate the situation. She and hundreds of other parents belong to a group known as the Association for Missing Babies of Serbia. If anyone has information, they are invited to contact journalist, Gréta Basity, bpgreti@gmail.com. DNA data of the parents, as well as other documents, can be made available.

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