

NEWS, VIEWS AND COMMENTS

I. ‘Street of Twins’: Multiple Births in Cuba II. The Cuban Twin Registry: An Update / Twin Research Reports: Cord Entanglement; Heritability of Clubfoot; School Separation / Twins and Twin Researchers in the News: Reunited at Seventy-Eight; Basketball Duo Dissolved; Delivered Holding Hands; The Better Brew; Award Winners

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I was part of a people-to-people tour of Havana, Cuba during the first week in April 2014. Among the many highlights of that adventure were an informal meeting with Dr Beatriz Marcheco-Teruel, from Cuba’s National Center for Medical Genetics, and a visit to the famous ‘Street of Twins’. A fortuitous meeting with parents of twins in the fishing town of Jaimanitas was also an extraordinary event. The Cuban experience is followed by summaries of recent twin research, covering umbilical cord entanglement, the heritability of clubfoot and school separation policies for twins. Media reports include twins reunited at age 78, the future of UCLA’s twin basketball players, MZ twins born holding hands, a twin conflict over beer and a pair of American Psychological Association honors for Drs Nancy L. Segal and Thomas J. Bouchard, Jr.

I. ‘Street of Twins’: Multiple Births in Cuba

I visited Havana, Cuba in April 2014 as part of a people-to-people tour, sponsored by KJAZZ, the music station that broadcasts from California State University, Long Beach. Travel to Cuba from the United States is possible due to a federal government licensing program known as people-to-people travel. A number of companies who have obtained this license conduct guided group tours of Havana and other parts of Cuba.

Prior to this visit, I was interviewed by an Associated Press journalist living in Havana who was researching information about twins and twin births. The article he was planning concerned an area in the western part of the city

that has come to be called ‘The Street of Twins’. A total of 12 twin pairs and their families live in this two-block neighborhood. The journalist wondered if this number of twins was unusually high, given that only 224 residents lived there. I told him that it was, based on the current Western twinning rate of 1/30 births. Also prior to my visit, I recalled reading an informative article describing the Cuban Twin

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FIGURE 1

(Colour online) Two sets of MZ female twins living on the 'Street of Twins' in Hanava, Cuba. Photo credit: Nancy L. Segal.

Registry (CTR) in the special 2012 registry issue of *Twin Research and Human Genetics*. The large size of the registry and the considerable amount of twin data available are impressive.

When I was in Havana, I was fortunate to have met informally with Dr Beatriz Marcheco-Teruel who established and directs the registry. I invited her to provide an update on the CTR, which appears below. I was also able to meet three of the twin pairs who live on the famous street, as well as their parents. I also took part in an unplanned meeting with parents of identical twin sons who live in an unusual neighborhood outside the main part of Havana.

According to journalist Andrea Rodriguez (2013), the 12 twin pairs include 10 MZ sets and 2 DZ sets. The twins are as young as 6 and as old as 65 years of age. None of the mothers had taken fertility treatments. The families are naturally quite curious as to why a concentration of multiple births occurs in their small area. One of the fathers claimed that there are more than 40 twin pairs living in the 600 square meters surrounding their two streets, but that has not been confirmed.

Some Cuban people believe that honey from the guira, the green fruit of the Siguaroya tree, is responsible for fertility in general, and multiple births, in particular. This particular: A Siguaroya tree stands in the yard of one of the young twin pairs, Karla and Kamila, whom I met. Their mother Sureya does not believe this story, but noted that

there are many twins in her family, and that her own mother miscarried a pair. Interestingly, most of the twins that have drawn so much attention are MZ, the type of twinning that is not commonly linked to genetic factors. However, it is possible that a subset of MZ twinning has a genetic component. Evidence to support this idea was discussed by Dr. Bruno Reversade at the 2012 *International Society of Twin Studies Congress*, held in Florence, Italy (see Segal, 2012 for a summary of highlights from that meeting).

In addition to Karla and Kamila, I met young MZ twins Ashley and Ashlen and their mother Tamara. Tamara was originally left-handed, but her handedness was switched as a young child. An association between parental left-handedness and twinning has been reported (Boklage, 1981). I was also introduced to young DZ twin boys, Arrian and Adrian, and their parents, Alma Lidia and Ramon. Photos of the twins are shown in Figures 1 and 2.

Everyone had gathered at the home of Karla and Kamila and seemed to know one another well. Ramon commented that families with twins share a special connection with one another, and that was apparent. This is a quality I have observed among multiple birth families everywhere, one that most likely comes from the rearing and financial challenges these parents face. However, the twins in Havana were unique in that they were living so closely together. Unfortunately, support groups such as Mothers of Twins Clubs do not exist in Cuba.



FIGURE 2

(Colour online) A set of DZ male twins living on the 'Street of Twins' in Havana, Cuba. Photo credit: Nancy L. Segal.

Toward the end of my visit, our group traveled to Jaimanitas, a fishing town on the northwestern edge of Havana

(Academic Arrangements Abroad, 2014). An area of this small city, known as 'Fusterlandia', is the site of the studio and home of the distinguished Cuban artist, José Rodríguez Fuster. Fuster has been described as the 'Picasso of the Caribbean' because of his extraordinary ceramic murals and domes that decorate the homes and buildings of the town. The designs differ greatly and are crafted specifically to match the tastes and preferences of the residents. Fusterlandia is a very popular tourist attraction.

While wondering the colorful streets, I noticed a wooden arch with the words, 'Los Jimaguas'. The arch stood over a wall on which the words 'Aiki Ju Jutsu' were written. Below the words were two matching painted human figures with the universal ying/yang symbol where the faces should be; this symbol embodies the Chinese concept of the harmony of opposites. The figures seemed 'twin-like' and it turned out that they were — a local resident explained that Los Jimaguas means a woman with more than one baby in her womb. Other sources indicate that the term means identical twins. This neighborhood scene is displayed in Figure 3.

Fortunately, there was an opportunity to learn more about the family who was living there. A man and woman suddenly exited the home that was adjacent to the wall and we learned that they were the parents of identical twin sons. The twins, now young adults, were at work, but we were able to see several family photos. The couple also indicated that both their sons practice martial arts, explaining to the artwork on their wall. It is of great interest to discover the ways in which twinship is depicted and celebrated almost everywhere around the world.

II. The Cuban Twin Registry: An Update

The Cuban Twin Registry (CTR) was established in 2006 by the National Center for Medical Genetics, in collaboration with several scientific centers, the Ministry of Public Health and the twins and their families. Current information from nearly 60 000 twin pairs is included. The main purpose of the register is to facilitate access to twins, with special reference to determining (1) the prevalence of multiple births (twins and higher order multiples) at the level of the province and country, (2) the number of multiple births organized by zygosity, and (3) other demographic characteristics of multiple births according to national region. There is also interest in studying genetic and environmental influences on the etiology of birth defects and complex disorders with high morbidity and mortality in the Cuban population. Information relevant to these goals appeared in an article in the recent registry issue of *Twin Research and Human Genetics* (Marcheco-Teruel et al, 2012). Since

then, the registry has been used mainly for classical genetic epidemiological work, due mostly to the technological limitations of an underdeveloped country like Cuba.

Multiple Birth Rates

A recent analysis of differences in multiple birth rates by province was completed with data from 1989–2010, spanning 22 years. This analysis revealed important regional differences. The two most eastern provinces and three central provinces showed the highest multiple birth rates, relative to the three most western provinces, as shown in Figure 4. This result does not seem directly associated with the population, given that CH, SC and HG are the most highly populated provinces and those with the highest annual number of births. VC has the eldest population in the country, and SC and GT are provinces with the highest estimates of African ancestry.



FIGURE 3

(Colour online) Twin-like figures on a wall next to the home of identical male twins in the 'Fusterlandia' neighborhood of Jaimanitas, Cuba. Photo credit: Nancy L. Segal.

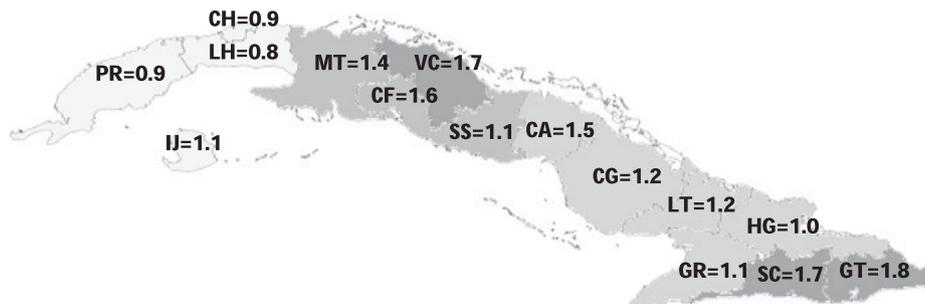


FIGURE 4

Multiple birth rates in Cuba (1989–2010) according to the previous political and administrative division of the country (a new administrative division began in 2011 by dividing LH into two new provinces). Shown are multiple births rates \times 100 births and by province. Note: PR = Pinar del Río, LH = La Habana, CH = Ciudad Habana (capital), MT = Matanzas, VC = Villa Clara, CF = Cienfuegos, SS = Sancti Spiritus, CA = Ciego de Ávila, CG = Camagüey, LT = Las Tunas, HG = Holguín, GR = Granma, HG = Holguín, SC = Santiago de Cuba, GT = Guantánamo, IJ = Isla de la Juventud.

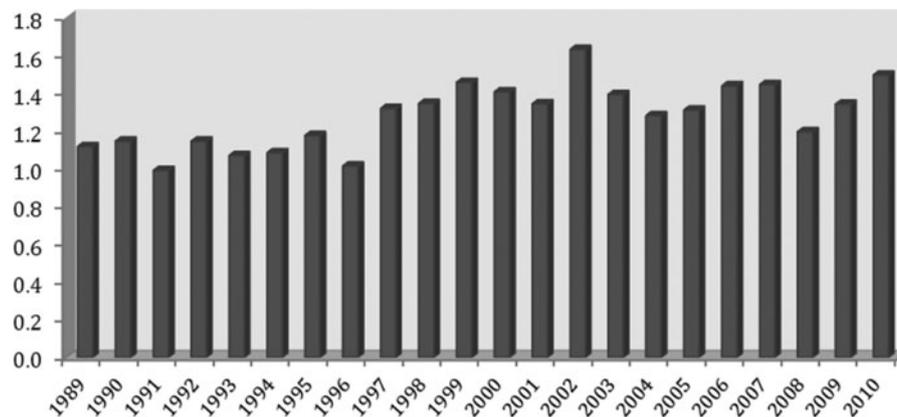


FIGURE 5
Multiple pregnancies Cuba 1989–2010: Rate × 100 births.

Using data from the same period, the average multiple birth figures across the country were analyzed. The years 2002, 1999 and 2010 exhibited the highest rates, although they were not the years with the highest number of births. These data are shown in [Figure 5](#).

Skin Color

As the most highly populated of Caribbean countries, Cuba shows a mosaic of tonalities in the skin color of its people, as

well as in other characteristics traditionally referenced for establishing ethnicity. The intermarriage of Native Americans, Africans and Spaniards occurred throughout Cuban history, resulting in highly variable skin colors among members of the current generation. In this regard, the CTR classifies 54.2% of twin pairs as white (blancos), 23.0% as mixed (mestizos), and 11.3% as black (11.5%). It is also the case that co-twins in 6,388 pairs are discordant for skin tone.

Twin Research Reports

Cord Entanglement

Italian researchers reported the delivery of monoamniotic MZ twins by elective cesarean section at 33 weeks gestation. The umbilical cords showed considerable entanglement, although coils and constrictions were not observed (Salvi et al., 2014). A coil is a 360-degree spiral course of the umbilical vessels. The umbilical cord index (UCI) is the total number of coils divided by the total length of the cord in centimeters (Chitra et al., 2012). A constriction involves narrowing of the cord and vascular lumens (channel within the tube), and thickening of the vascular walls, leading to reduction of the fetal blood supply (Hallak et al., 1994). The researchers noted that since cord entanglement can increase multiple birth risks, a planned preterm delivery is advised.

Heritability of Clubfoot

The genetic and environmental influences on clubfoot have been debated. A recent Danish study examined this issue using twins from the Danish Twin Registry, located in Odense (Engell, Nielsen, Damborg, Kyvik, Thomsen, Pedersen, Andersen, et al., 2014). The investigators first noted that con-

cordance values are higher for MZ (33%), than DZ twin pairs (3%), consistent with genetic effects. However, environmental events such as increased maternal alcohol use and smoking have been associated with the presence of clubfoot in newborns.

Responses were received from 99% of the 46 418 twins who received a survey with the question: ‘Were you born with clubfoot?’ Ninety-four individuals indicated that they were, with prevalence rates of .0027, .0031 and .0025 overall, and for males and females, respectively. Fifty-five complete twin pairs answered the question, including 12 MZ pairs, 22 DZ same-sex pairs, 18 DZ opposite-sex pairs and 3 pairs whose zygoty was unclassifiable. Tetrachoric correlations were .81 (MZ) and .56 (DZ), suggesting a genetic component to clubfoot. Model fitting yielded a heritability of 30% for this condition.

School Separation

Separating young twins at school is a complex question faced by parents of multiple birth children. A recent study examined this question using data from a survey specially designed by Gordon (2014), who determined that 71% of

131 elementary school principals advocate separating twins attending kindergarten for the first time. However, this view was endorsed by only 49% of teachers, 38% of parents and 19% of young twins. Interestingly, 100% of the young female identical twins preferred to remain together.

Premature separation of twins at school can be psychologically harmful for families. It was determined that 3% of the twins were 'traumatized' and 17% were 'somewhat traumatized' by early school separation. Most parents advocated keeping young twins together, with the belief that

school administrators should consider parents' views in this matter. The key point made in this paper was that teachers and administrators should maintain flexibility regarding twins' school placement, considering each twin's special circumstances.

Currently, 12 states have passed, and others are in the process of passing, legislation granting parents a significant voice in their twin children's classroom placement. Additional information about such twin legislation is available at twinslaw.com.

Twins and Twin Researchers in the News

Reunited at Seventy-Eight

On May 1, 2014, I reunited the world's longest separated pair of twins. Fraternal twins, Elizabeth (Liz) Hamel and Ann Hunt, were born in Aldershot, England on February 28, 1936 to an unwed single mother. Their mother was unable to keep both twins, so relinquished Ann for adoption; Liz had curvature of the spine, making her a 'less adoptable' baby. Ann never knew she had a twin until this fact was discovered by her daughter while searching for her mother's biological relatives.

The twins, each accompanied by an adult child, participated in an intensive 2-day psychological and medical study at my Twin Studies Center at California State University, Fullerton. They were reunited at the age of 78. Each twin also met a niece or nephew for the first time, and two new cousins came together. Plans to publish the findings as a case study are under way. A story (Venema, 2014) and film clip of their extraordinary meeting can both be found at <http://www.bbc.com/news/magazine-27188642>. Also see my *New York Times* article about these twins and more: http://www.nytimes.com/2014/05/25/opinion/sunday/the-closest-of-strangers.html?_r=0.

Basketball Duo Dissolved

The Wear twins, David and Travis, are six-foot, ten-inch players for UCLA's basketball team (Foster, 2014). They were teammates at Mater Del High School, in Santa Ana California, before joining the University of North Carolina's Tarheels, then transferring schools to play for UCLA's Bruins. Next year, the twins will be apart, playing for separate teams and sometimes against each other. So far, they have never been separated for longer than 1 week. They seem to accept this change as part of the normal course of events, but insist that they will speak to one another every day.

It will be interesting to follow the progress of these twins as they embark upon individual careers. Not all separated twin athletes fare well, although David's performance did

not appear to suffer when Travis was recovering from an appendectomy. However, that situation was temporary; playing for different teams may pose new challenges.

Delivered Holding Hands

In a stunning twin delivery, identical twins, Jillian and Jenna Thistlethwaite, were born May 9, 2014, at the Akron General Medical Center, in Akron, Ohio (Fox News, 12 May, 2014). What is remarkable about these twins is that they were delivered holding hands. They are also a rare monochorionic-monoamniotic pair, sharing their placenta and fetal membranes; such pairs represent approximately .1–4% of MZ twins (see Segal, 2000 and references therein).

The twins, who were born at 33 weeks gestation, are doing well. Jenna, the firstborn twin, weighed four pounds, two ounces, while Jillian weighed three pounds, thirteen ounces. The twins are seventeen inches and seventeen and a half inches long, respectively. A photo of their amazing delivery can be found at <http://www.myfoxdfw.com/story/25494516/identical-newborn-twins-hold-hands-after-birth> (Fox News, 2014).

The Better Brew

The complex and close, but sometimes tense interactions between identical twins are well captured in a recent essay on the brewing of beer (Weiner, 2014). Mikkel Borg Bjergso and his twin brother Jeppe jarnti-Bjergso, age 38, are famous for their love of beer and their creativity in producing exotic flavors. They are also famous for their within-pair conflicts, as well as the close psychological connection that continues to shape their lives. Mikkel runs a Danish brewery called Mikkeller which made 124 different brews during the past year; most breweries produce 20. Mikkel does not enjoy making beer, but relishes creating new recipes and trying them out. Jeppe began a brewery of his own 4 years after Mikkel did. It is located in Brooklyn, New York and known as Evil Twin. Jeppe's move to Brooklyn was apparently regarded with relief by Mikkel, given the brothers' contrasting

temperaments — Mikkel is described as reserved, while Jeppe is described as extroverted. Mikkel observed that twins often see themselves in another person and do not always like what they see. He also noted that identical twins feel like the same person, something that only twins would understand. Being in the same business, albeit separately, they often comment on one another's activities, but not always in flattering ways.

The twins became close to one another as children when their parents divorced. However, their competitive edge was apparent at a young age when they would try to outdo one another in various activities, from emptying the dishwasher to running in middle-distance races. They were 1/100 of a second apart in the 1994 800-meter race at the Aarhus Games, in which Mikkel placed second and Jeppe placed third.

I suspect that the twins' differences are more quantitative than qualitative in nature, stemming from their relationship with each other. They deny being enemies, but have not communicated for over 1 year. Their cool and complex, relations yet continued awareness and monitoring of one another highlight a fascinating aspect of twinship. Their public struggle has most probably increased business for both, and perhaps they know this.

Award Winners

Two ISTS members, Nancy L. Segal and Thomas J. Bouchard, Jr., will be honored at the August 2014 annual convention of the American Psychological Association (APA), in Washington, DC. Segal was chosen to receive the William James Book Award given by Division 1 (General Psychology) for her book, *Born Together-Reared Apart: The Landmark Minnesota Twin Study* (2013, Harvard University Press). She will deliver an invited address on August 7, from 2.00–2.50 pm. The full text of Segal's address will appear in an upcoming issue of *The General Psychologist* (Segal, 2014).

Bouchard was chosen as the winner of the American Psychological Foundation's (APF) Gold Medal for Lifetime Achievement in the Science of Psychology. He will be recognized in a ceremony held on August 8, from 4.00–5.30 pm. Information about this award and Bouchard's career can be found in an upcoming issue of the *American Psychologist* (American Psychological Association, 2014).

References

- Academic Arrangements Abroad. (2014). Fusterlandia: A ceramic wonderland on the outskirts of Havana. Retrieved from <http://arrangementsabroad.wordpress.com/2014/02/28/fusterlandia-a-ceramic-wonderland-on-the-outskirts-of-havana/>
- American Psychological Association. (2014, in press). Gold medal award for life achievement in the science of psychology: Thomas J. Bouchard, Jr. *American Psychologist*.
- Boklage, C. E. (1981). On the distribution of nonrighthandedness among twins and their families. *Acta Geneticae et Medicae Gemellologiae*, 30, 167–187.
- Chitra, T., Sushanth, Y. S., & Raghavan, S. (2012). Umbilical coiling index as a marker of perinatal outcome: An analytical study. *Obstetrics and Gynecology International*, Article ID 213689.
- Engell, V., Nielsen, J., Damborg, F., Kyvik, K. O., Thomsen, K., Pedersen, N. W., Andersen, M., & Overgaard, S. (2014). Heritability of clubfoot: A twin study. *Journal of Child Orthopaedics*, 8(1), 37–41.
- Foster, C. (2014, March 2). Separate ways. *Los Angeles Times*, p. C5.
- Fox News. (2014, May 12). Identical newborn twins hold hands after birth. Retrieved from <http://www.myfoxdfw.com/story/25494516/identical-newborn-twins-hold-hands-after-birth>
- Gordon, L. M. (2014). Twins and kindergarten separation: Divergent beliefs of principals, teachers, parents, and twins. *Educational Policy*. Advance online publication. doi:10.1177/0895904813510778.
- Hallak, M., Pryde, P. G., Quershi, F., Johnson, M. P., Jacques, S. M., & Evans, M. I. (1994). Constriction of the umbilical cord leading to death: A report of three cases. *Journal of Reproductive Medicine*, 39, 561–565.
- Marcheco-Teruel, B., Cobas-Ruiz, M., Cabrera-Cruz, N., Lantigua-Cruz, A., García-Castillo, E., Lardoeyt-Ferrer, R., ... Valdés-Sosa, M. (2012). The Cuban Twin Registry: Initial findings and perspectives. *Twin Research and Human Genetics*, 16, 98–103.
- Rodriguez, A. (2013, October 4). 12 sets of Cuban twins live on consecutive Havana blocks. *World: Huffington Post*. Retrieved from http://www.huffingtonpost.com/2013/10/04/havana-twins_n_4044696.html
- Salvi, S., De Carolis, S., Del Sordo, G., Garufi, C., & De Carolis, M.P. (2014). Cord entanglement. *Archives of Diseases in Child and Fetal Neonatology Edition*. Advance online publication.
- Segal, N. L. (2000). *Entwined lives: Twins and what they tell us about human behavior*. New York: Plume.
- Segal, N. L. (2012). The 14th Congress of the International Society for Twin Studies: Selected highlights. *Twin Research and Human Genetics*, 15, 685–690.
- Segal, N. L. (2014). The Minnesota Study of Twins Reared Apart: The science behind the fascination. *The General Psychologist* (in progress).
- Venema, V. (2014, May 2). Longest separated twins find each other. *BBC News Magazine*. Retrieved from <http://www.bbc.com/news/magazine-27188642>
- Weiner, J. (2014, March 30). A fight is brewing. *New York Times Magazine*.