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Peer Tutoring's Potential to Boost IQ Intrigues Educators

By [Debra Viadero](#)

Two Norwegian scientists published an important pair of studies in June showing that firstborn children have higher IQ scores than their younger siblings—and, more significantly, that those differences owed more to family dynamics than to biology.

The articles created a buzz in academic circles and the media, fueling speculation on the possible causes of that IQ gap. Of all the theories espoused, though, one is particularly relevant for educators. It suggests that firstborns are smarter because they spend more time tutoring younger siblings.

"Explaining something to a younger sibling solidifies your knowledge and allows you to grow more extensively," Robert Zajonc, the Stanford University psychologist who puts forth that idea, told *The New York Times* at the time.

If that's the case, a logical next question for educators is: Does that bolster the case for formal peer-tutoring programs in K-12 schools? Possibly, but not necessarily, experts say.

"My wife taught herself to read around age 3 or 4, and then taught her younger sister to read," said Douglas Fuchs, a special education professor at Vanderbilt University in Nashville, Tenn., who has developed and tested a program of peer-assisted learning strategies along with his wife, Lynn S. Fuchs.

"My hunch is that the effort on her part probably helped her to become a better reader," he said. "Did that increase my wife's IQ? That's where the leap is, because IQ tests cover really a whole lot of other things."

Frank J. Sulloway, a visiting scholar at the Institute of Personality and Social Research at the University of California, Berkeley, was equally skeptical.

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“How much tutoring do siblings do, really?” he said. “I still think it’s a bit dubious.”

Evidence of Benefits

Yet some of the same experts point to a fairly robust research base on peer tutoring. More than 30 years’ worth of studies of elementary-level peer-tutoring programs suggests that both the tutor and the tutee learn better when they teach each other than they do in regular teacher-led classrooms.

“Some studies have even shown the effects for the peer teachers are greater than they are for the learner,” said Marika D. Ginsburg-Block, an assistant professor of psychology at the University of Delaware, in Newark. “That would lend support for the hypothesis that it’s the firstborn who’s gaining from the experience.”

For a research review published in 2003 by the peer-reviewed *Journal of Educational Research*, Ms. Ginsburg-Block and her co-authors analyzed findings from more than 80 studies on peer-assisted learning. Overall, they found that peer-tutoring practices were “moderately effective,” compared with normal classroom practices.

The effects were strongest, though, for students who were younger, in inner-city schools, from poor families, or members of minority groups. The researchers did not break out less frequently used “cross-age” tutoring programs, in which older students are paired with younger ones, to see how they compared with same-age tutoring.

In a second study published last year in the same journal, the same research team found that peer tutoring also provided nonacademic benefits for students. That analysis of 36 studies concluded that students taking part in peer-teaching activities spent more time on task, exhibited better social skills, and expressed more motivation and less frustration than counterparts in teacher-directed classrooms.

Likewise, the What Works Clearinghouse, a research group set up by the U.S. Department of Education to vet studies on educational interventions, gave different versions of the technique—including the Peer-Assisted Learning Strategies, or PALS, program that the Fuchses developed—a “potentially positive” rating for effectiveness.

Homes vs. Classrooms

Stephanie Rhoton, a 4th grade teacher at Dodson Elementary School in Hermitage, Tenn., who uses PALS with her pupils, agrees that both high- and low-skilled students profit by working together.

“With the higher-IQ children, they know the material and they understand the concept, but they have a hard time verbalizing it. When they work with their peers, it challenges them to have to explain it,” she said. “I can’t quite explain it to them the way their peers can.”

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But researchers and practitioners alike note that the structured programs popular in many elementary and middle schools are a far cry from the more informal learning opportunities that arise in families. In fact, most studies suggest that, although it's important for students to be in charge of their own learning progress in peer-tutoring programs, structure is also key to the programs' success, Ms. Ginsburg-Block said.

The idea that sibling-to-sibling teaching contributes to intellectual growth comes out of research Mr. Zajonc did in the 1970s. He contends that firstborn children benefit at first from the undivided attention and the rich vocabulary of their parents.

But the arrival of a younger sibling dilutes and diminishes the intellectual environment for the eldest child as the family necessarily caters to the needs of the new baby.

What Mr. Zajonc and his colleagues have found is that, up until age 12, younger siblings actually outdo their older brothers and sisters on IQ tests. He says that firstborns regain their intellectual edge later on because of all the time spent teaching what they know to siblings. The theory also helps explain the counterintuitive finding that only children tend to have lower IQ scores, on average, than do firstborns in larger families.

A 1993 study by Thomas Ewin Smith, a professor emeritus of sociology at the University of South Carolina-Columbia, bolstered that idea by finding that older siblings who reported that they spent more time teaching younger children tended to experience more growth in verbal intelligence during their teenage years than those who tutored less often. There was no effect for mathematical aptitude.

'Mechanism' a Mystery

In the Norwegian studies, which were published simultaneously in the journals *Science* and *Intelligence*, researchers Petter Kristensen and Tor Bjerkedal drew on a sample of 241,310 Norwegian army recruits ages 18 and 19. Within families, they found, the IQs of the eldest brothers were 2.3 points higher than those of their next-closest siblings—a small difference but enough to boost the odds of being admitted to Norway's most prestigious college by 13 percent, according to Mr. Sulloway, who wrote a commentary on the findings for *Science*.

What makes the study noteworthy, though, is that the researchers also determined that second-born men with an older sibling who died in childhood had IQ scores that were nearly as high, on average, as those of firstborn children.

"In my view, this put an end to more than a half-century of debate on the role of birth order, because it completely ruled out biological explanations for the differences," Mr. Sulloway said in an interview. "The problem is that we just don't know the mechanism."

Besides peer tutoring, another theory points to children's perception of their role in the family.

"The oldest child goes to school first and tries to do well to please the parents," Mr. Sulloway added. "Since the first one has nailed down the school niche, the younger siblings tend to diversify."

A younger child might go on to become the clown of the family, the athlete, or the whiner, for example.

Studies also show that parents tend to be more verbally communicative with their older children—another possible explanation.

"Certainly, I don't think it hurts being the first teacher," Ms. Ginsburg-Block said of firstborns. But she said more research is needed on whether sibling-to-sibling tutoring gives eldest children an IQ edge, and whether that has implications for the classroom.

"Being the mother of an older daughter and a younger son," she added, "I think it's definitely an interesting question."

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