Adult Attitudes: Share and Share Alike

Although recent evidence indicates that unique childhood experiences of family life steer personality development among children and teenagers, the shared experiences of spouses largely shape their attitudes and values during adulthood, according to a reanalysis of data gathered from the 1930s to the 1950s.

Whereas youngsters have no control over their "family of origin" and seek a coherent identity by viewing sibling and parental relationships through a unique prism, adults — at least in successful marriages — strive to create shared experiences that foster a sense of belonging and connection, suggests psychologist Avshalom Caspi of the University of Wisconsin-Madison. Caspi directed the new look at these decades-old data from the longest prospective study of married couples conducted to date. Caspi's reanalysis appears in the February JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY.

"A host of shared experiences that we cannot yet specify contribute to enduring similarities between spouses," Caspi asserts. "Common involvement in work, recreational and religious activities is probably crucial."

Caspi's group analyzed measures of general values and attitudes toward marriage completed by 165 married couples shortly after their engagement and again 20 years later. They obtained the information from a research center at Radcliffe College in Cambridge, Mass., that stores data from many psychological studies. Value measures charted religious and political views and social and leisure pursuits. Attitude measures revealed beliefs about marital fidelity, premarital sex, the need for spouses to hold common interests, child rearing and how to manage a household.

Couples who stayed married did not grow more alike, as commonly assumed; instead, they remained moderately similar in attitudes and values across 20 years, the researchers contend. Further analysis indicates that this 20-year similarity does not depend on the influence of husbands on wives, wives on husbands or their mutual similarity to start.

In fact, 25 couples who separated during the study showed moderate similarity at first but markedly less 20 years later, suggesting that similarity between partners breaks down without shared experiences, Caspi asserts. The still-married husbands and wives changed in the same direction over the course of their marriage, providing further evidence that shared experiences maintain similarities between spouses, Caspi argues.

The notion that shared experiences guide adult personality gains support from an ongoing study of more than 7,000 pairs of adult identical and fraternal twins conducted by another research team, Caspi says. Twins engaging in frequent social contact exhibit more similarity in personality than those who see each other infrequently.

However, some researchers consider nonshared experiences as key influences on personality development from childhood through adulthood.

"Caspi presents some interesting data, but the notion of a shared environment between spouses is unclear," says psychologist Robert Plomin of Pennsylvania State University in University Park.

Each family member perceives the web of family relationships differently, Plomin holds (SN: 12/7/91, p.376). Thus, nonshared influences should maintain a firm grip on adults as well as children.

Support for Plomin's position comes from a study in the March 1990 PSYCHOLOGICAL SCIENCE that found comparable religious values and commitment among adult identical and fraternal twins, whether reared together or apart. Shared family experiences of twins growing up together played a small role in adult religious outlook, concluded a team led by psychologist Niels G. Waller of the University of Minnesota in Minneapolis.

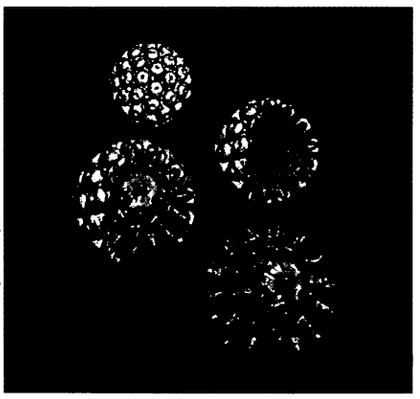
Future work must examine the similarity of siblings' spouses to one another and chart adult personality changes among married siblings to reveal more about adult development, Plomin contends. *— B. Bower*

Making sense of the disorder inside viruses

Using data that most crystallographers throw away, biophysicists have for the first time taken a close look at the interior organization of a tumor virus.

That look reveals an inner structure resembling the seed casing of a horse chestnut: rounded, with prongs sticking out in all directions. These prongs form a bridge between the virus' genetic material and its enveloping protein coat, says Donald L.D. Caspar of Brandeis University in Waltham, Mass. In the Feb. 13 NATURE, he and his colleagues describe their findings, which provide new clues about how disordered structures link up with ordered ones.

The Brandeis group studied the polyomavirus, a mouse virus related to viruses associated with warts and cervical cancer. Just a few months ago, Harvard scientists developed an atomic-scale picture showing how multiple copies of a protein can bundle into five-sided units to make the outside coats of viruses in this family (SN: 12/7/91, p.372).



J.P. Griffith/Image Ability/NATURE

The top two computer-generated images show the whole viral coat in gray (upper left) and the coat with a section missing. The lower two reveal the pronged interior in orange, as it links with the coat (lower left) and by itself.

Like the Harvard team, the Brandeis group used X-ray diffraction data to determine the structure of a virus. X-ray diffraction provides information about the location of electrons — and, consequently, atoms — in a crystal. But that information results from averaging the locations of electrons in millions of molecules or, in this case, virus particles. Thus, the technique yields atomic-scale resolution only when the structures are highly ordered; otherwise, the locations cannot be pinpointed and the data have low resolution. "Everybody in protein crystallography usually throws away the low-resolution data," says Lee Makowski, a biophysicist at Boston University.

The viruses' interiors lack a high degree of order, but the Brandeis group decided that the information from low-resolution data could be useful. By focusing on these fuzzy results, they could see how the proteins and genetic material were arranged, even though they could not tell exactly where the atoms were. Still, getting a sense of the inside of the virus proved tricky.

Using computers to help with their analysis, the researchers took lots of measurements of the empty coat and then subtracted those data from measurements of whole viruses. "By looking at the differences, we were able to get a map of the inside," Caspar explains.

"This remarkable use of low-resolution data is providing a basis for understanding the structural interface between the ordered and disordered structures," comments Makowski. "It's going to help