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Reducing autistic children's "dental phobia"

Most parents dread taking their autistic children to dentists, and with good reason: few autistic children can tolerate even minor dental procedures without becoming frightened or aggressive. Because of this, Deanna Luscre and David Center say, "children with autism have a high prevalence of carious lesions, poor oral hygiene, and more periodontal disease than their normal counterparts," and dental care is often delayed to the point where surgery and general anesthesia are required. But Luscre and Center say that autistic children can be taught to tolerate routine dental office visits, through the use of techniques commonly used for phobic non-disabled children.

The researchers worked with three young autistic boys who initially were unable to tolerate more than five minutes in a dentist's chair. Luscre and Center created a simulated dental office, including a reclining chair, light stand, and dental tools. A real dental office was used during baseline evaluations, weekly "progress checks" to see which steps the subjects could tolerate in an actual office, and a final dental exam. The researchers employed three basic techniques used to calm phobic non-autistic children:

- "Anti-anxiety stimuli," such as country music, Play-Doh, rhyming games, and food, were provided to calm the children during each anxiety-provoking step of the exam.
- The children were shown videos of non-disabled children participating in each step of a dental exam. The video included a voice-over explaining each step. After each step of the video was shown, the trainer encouraged the subjects to allow the step to be performed in the simulated dental office setting.
- After successful completion of a step, the children were rewarded with favorite reinforcers.

The researchers say that treatment in the simulated setting led to marked improvements in subjects' ability to tolerate dental procedures, which generalized to the real dental office setting. The more often the subjects received training in the simulated and real dental office settings, the more steps of a dental visit they could tolerate. In addition, Luscre and Center say, "once treatment began, there were no aggressive acts toward any adult acting as a dentist."

After only a few weeks of daily training, the researchers say, all three subjects were able to undergo an oral dental exam in the simulated setting. One subject completed an exam in the real setting, while the other two were able to complete 11 of 13 steps of a real exam. "The good results attained in this study are remarkable," the researchers say, "especially for [one subject] who had to be tied to a papoose board during previous dental visits."

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"Procedures for reducing dental fear in children with autism," Deanna M. Luscre and David B. Center; *Journal of Autism and Developmental Disorders*, Vol. 26, No. 5, October 1996, pp. 547-556. Address not listed.

X chromosome investigated

A new study by Joachim Hallmayer et al. concludes that "no gene with a large impact on susceptibility [to autism] resides on the X chromosome," but hints that a gene or genes on the X chromosome may play a minor role in autism.

Hallmayer and colleagues, studying 38 families with more than one autistic child, found "some limited evidence that a gene of minor effect" may be located on one region of the X chromosome (between DXS453 and DXS1001). Commenting on the study, P. Anne McBride et al. note that this chromosome region "might explain up to a 4-fold increase in risk to siblings of autistic individuals."

"Although the authors interpret these results as providing limited evidence for a gene of 'minor' effect on the X chromosome," McBride et al. say, "three or four such genes (each explaining up to a 4-fold increase in risk) could explain much or all of the estimated 75-fold increased risk" for autism among siblings of autistic children.

Geneticists are investigating the X chromosome's possible connection to autism because autism is much more common in males than in females, suggesting a recessive X gene. Because females inherit two X chromosomes, an abnormal recessive gene on one X chromosome will be negated by a normal gene on the other X chromosome; males, however, inherit only one X chromosome, making them vulnerable to X-linked recessive diseases.

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"Autism and the X chromosome," Joachim Hallmayer, Joan M. Hebert, Donna Spiker, Linda Lotspeich, Wiliam M. McMahon, Brent Petersen, Peter Nicholas, Carmen Pingree, Alice A. Lin, Luca L. Cavalli-Sforza, Neil Risch, and Roland D. Ciaranello; *Archives of General Psychiatry*, Vol. 53, November 1996, pp. 985-989. Address: Donna Spiker, Stanford Autism Genetics Program, Department of Psychiatry and Behavioral Sciences, Mail Code 5540, Stanford University School of Medicine, Stanford, CA 94305.

Siblings with PDD show marked similarities

More evidence of a genetic influence on autism and pervasive developmental disorder (PDD) comes from a new study by Peter Szatmari et al.

The researchers studied 23 families with multiple cases of PDD, and 37 families with a single affected child. They compared the similarity of autistic symptoms a) within sibling pairs with PDD, and b) among unrelated children with PDD. (Siblings without PDD also were studied, to verify that any similarities seen in related PDD children were not due to other family influences.)

Szatmari et al. report that although wide variation in symptom severity was seen among unrelated children with PDD, "there was a remarkable degree of similarity among affected siblings." In particular, siblings with PDD showed marked similarities in IQ scores (especially nonverbal scores) and scores of social behavior.

"These findings," the researchers say, "suggest that familial, rather than nonshared environmental, factors account for variations in severity among affected PDD children from different families."

The researchers suggest two possible genetic explanations for the finding that related children with PDD are much more similar than PDD children in general:

- There may be a maternal genetic effect similar to that seen in children of mothers with phenylketonuria. In PKU, the researchers say, "two children from the same family are often affected to the same degree, depending on the level of maternal phenylalanine."
- The mutation causing autism or PDD may be unstable or dynamic, much like the fragile X mutation, in which the severity of symptoms is linked to the number of times a particular trinucleotide sequence is repeated. "A similar process... could occur in autism/PDD," the researchers say. "Different families would have different numbers of repeats, explaining the variation among families, but affected siblings from the same family would have similar numbers of repeats and be affected to a similar degree."

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"High phenotypic correlations among siblings with autism and pervasive developmental disorders," Peter Szatmari, Marshall B. Jones, Jeannette Holden, Susan Bryson, William Mahoney, Larry Tuff, Joanna MacLean, Bradley White, Giampiero Bartolucci, Chris Schutz, Paula Robinson, and Lorraine Hoult; *American Journal of Medical Genetics*, 67, 1996, pp. 354-360. Address: Peter Szatmari, Centre for Studies of Children at Risk, Chedoke-McMaster Hospitals, Chedoke Division, Patterson Building, 2nd Floor, P.O. Box 2000, Station A, Hamilton, Ontario L8N 3Z5, Canada.