

Time to Give Up on a Single Explanation for Autism?

Research Summary courtesy of Autism Speaks

On May 15-17th, over 1100 scientists from around the world gathered in London, England for the 7th Annual International Meeting for Autism Research (IMFAR). Organized by the International Society for Autism Research (INSAR), this year's attendance exceeded expectations and highlighted research in the areas of epidemiology, diagnosis, genetic and environmental factors, neurobiology and neuropathology, treatment, and for the first time, services for families affected with autism. The meeting was sponsored by Autism Speaks, the Medical Research Council of the UK, the Autism Society of America and Research Autism.

Each day's meeting started off with a keynote speaker, followed by concurrent presentations and poster sessions. The following article highlights just some of the research and theories that reflect the diverse set of ideas presented at the meeting.

On the first day, Dr. Francesca Happé, an autism researcher from the University of Psychiatry, Kings College, London, presented conclusions drawn from many years of researching twin pairs. She and her colleagues propose that science should focus away from a single unifying cause for autism. Instead, the triad of autistic traits (social, communicative, and repetitive behaviors) may each have separate causes, arising from genetic and environmental sources. This theory is based on findings from their Twins

Early Development Study, involving over 3400 sets of twin pairs, both identical and fraternal. Using the Childhood Asperger Syndrome Test, or CAST, which is a quantitative test, their study results indicate there is a continuum of scores in the twins, with variation in autism-like behaviors. These test scores normally fall on a typical bell-shaped curve in the general population, with people affected by autism falling on the upper end of the curve. Scores on the CAST tended to cluster together, more so in identical twins, indicating there may be different genetic underpinnings in each feature of autism, and that environmental factors can interact with these different genes in different ways.

As many researchers are considering how different features of autism fit together in a cognitive model, Dr. Happé addressed how the dissociation of each feature could explain theories like the Theory of Mind Hypothesis, Executive Function, and Weak Central Coherence Theory. She explained that if one area of function was weaker, through development and compensation abilities other traits would develop differently. Therefore, deficits in one area of functioning, such as social behavior, may influence the development of non-social behaviors like restrictive and repetitive behaviors. She also pointed out that there may be independence among these three theories, meaning that each one may explain certain areas of

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autistic-like behavior, but not all three aspects of the triad collectively.

Happé's research also supports the idea that autistic traits themselves may exist, and be measured, continuously on a spectrum, rather than being a straight "yes" or "no" diagnosis. This would support the idea that each feature of the triad of autism may have a distinct genetic contribution.

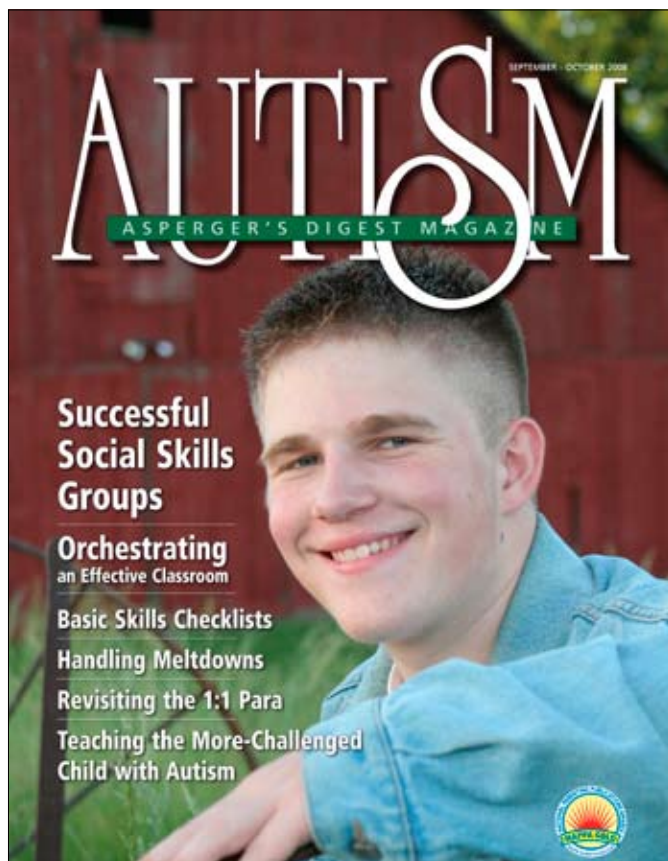
Saturday's keynote, given by Dr. John Constantino at Washington University School of Medicine, followed a similar thread of thought about ASD. Dr. Constantino has been studying the occurrence of autism-like traits in families with one or more affected family members, using a measure known as the "Social Responsiveness Scale." Features of autism found in family members who have not been clinically diagnosed is called the Broader Autism Phenotype. Dr. Constantino found that autism features can be commonly found in family members. This new thinking in the field will be useful in isolating potential genes and determining genetic and environmental contributions, ultimately leading to newer and more effective treatment strategies.

The final keynote speaker was Dr. Thomas Bougeron, who described ongoing research in the genetics of autism, including studying classes of genes responsible for synaptic remodeling rather than looking for a single gene for all aspects of the disorder. New research has pointed to genes such as neuroligin, neurexin, and SHANK, which affect how nerve cells communicate.

Because environmental factors may influence developmental trajectory of children affected by autism, both epidemiological and basic science research studies presented at the meeting examined a variety of factors that have been proposed to be involved. While medical interventions such as labor induction method and ultrasound use were not found to be related to a risk of developing autism, other factors such as pesticide exposure during the second trimester of pregnancy and early infection were found to be mildly associated. New studies, which investigate autism in families from time of pregnancy, such as the new EARLI study funded by the National Institutes of Health, are designed to accurately and comprehensively capture information on genetic and environmental contributions.

Other presentations at IMFAR examined the effectiveness of early diagnosis and early intervention, reinforced the utility of applied behavioral interventions, and explored new technological advances being used to both better identify skills and remediate challenges in individuals with ASD. ■

Created in 2001, the International Society for Autism Research is a scientific and professional organization devoted to advancing knowledge about autism spectrum disorders. For more information about their newest activities and the 2009 IMFAR conference, visit www.autism-insar.org. A full summary of the 2008 meeting can be found at www.autismspeaks.org/science/science_news/imfar_2008_final_recap.php.



**As Appeared in the
September/October
2008 issue.**

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