|MC:SUBJECT|

News, literature, and events in the ethical, social, and legal implications of psychiatric, neurologic, and behavioral genetics.

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Braingenethics Update

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In the Literature

Impact of Behavioral Genetic Evidence on the Perceptions and Dispositions of Child Abuse Victims

By Raymond Raad & Paul S. Appelbaum

One of the most studied gene-environment interactions involves low-activity alleles of the monoamine oxidase A (MAOA) gene, which appear to increase the risk of antisocial behavior among males in the wake of childhood maltreatment. Some scholars have suggested that decisions about disposition of child abuse victims should be shaped by these findings, but the extent of public support for such approaches has not been assessed.

In the News

New Gene Studies Suggest There Are Hundreds of Kinds of Autism

This article covers several recent approaches to studying the genetics of autism, highlighting differences in approaches for dissimilar gene variants.

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23andMe and Genentech to Analyze Genomic Data for Parkinson's Disease

23andMe has a new program that will support the identification of novel drug targets to treat Parkinson's disease.

Commentaries

The authors here conclude that behavioral genetic evidence has effects on perceptions of dangerousness and tendencies to view problems as medical but that the public is cautious about the use of genetic findings in child abuse adjudications.

Multifactorial Beliefs about the Role of Genetics and Behavior in Common Health Conditions: Prevalence and Associations with Participant Characteristics and Engagement in Health Behaviors
By Erika A. Waters, Jaclyn Muff, & Jada G. Hamilton
People's understanding of the multifactorial nature of health conditions has implications for their receptivity to health messages regarding genomics and medicine, and may be related to their adoption of protective health behaviors. Although past work has investigated aspects of either genetic or behavioral causal beliefs, multifactorial beliefs have not been evaluated systematically. Among 3,630 participants in this study, the vast majority (64.2–78.6%) endorsed multifactorial beliefs. These study findings and recommendations for future research provide preliminary guidance for developing and targeting genomics-related health messages and communications.

The Translational Potential of Research on the Ethical, Legal, and Social Implications of Genomics
By Wylie Burke et al.
Federally funded research on the ethical, legal, and social implications (ELSI) of genomics includes a programmatic charge to consider

The Downside of Resilience
By Jay Belsky
Behind a half-century of policies to promote child development, there lies an assumption: that children are essentially equally affected by the environments they grow up in, and that positive interventions like preschool education should therefore help all children. But what if this isn't true? Belsky examines the degree to which genetics distinguishes children who prove more versus less susceptible to developmental experiences.

The Downside of the Downside of Resilience: A New York Times Op-ed Ventures Into Dangerous Territory
By Laura Hercher
This commentary pushes back against Jay Belsky's New York Times opinion piece about genetic differences in children's susceptibility to environments. Unlike Belsky, Hercher argues that children should not be targeted for individual interventions based on their genetic predisposition to respond sensitively to environmental or developmental experiences.

In the Literature

Genome-wide Studies of Verbal Declarative Memory in Non-demented Older People: The CHARGE Consortium
By Stéphanie Debette et al.
Memory performance in older persons can reflect genetic influences on

policy-relevant questions and to communicate findings in venues that help inform the policy-making process. The authors review the questions of interest to ELSI researchers in light of experiences from a consortium of federally funded Centers of Excellence in ELSI Research, and offer a set of policy recommendations for program design and evaluation of ELSI research. They conclude that it would be a mistake to require that ELSI research programs demonstrate a direct impact on science or health policy; however, ELSI researchers can take steps to increase the relevance of their work to policy-makers.

Genetics of Complex Traits in Psychiatry

By Joel Gelernter

Virtually all psychiatric traits are genetically complex. This article discusses the genetics of complex traits in psychiatry. The complexity is accounted for by numerous factors, including multiple risk alleles, epistasis, and epigenetic effects such as methylation. Until recently, approaches to complex traits were limited, and consequently only a few variants, usually of individually minor effect, were identified. At the present time, a much richer armamentarium exists that includes the routine application of genome-wide association studies and next-generation high-throughput sequencing and the combination of this information with other biologically relevant information, such as expression data.

The Big Five Personality Traits:

cognitive function and dementing processes. Authors aimed to identify genetic contributions to verbal declarative memory in a community setting. This, the largest study to date exploring the genetics of memory function in 40,000 older individuals, revealed genome-wide associations.

Prenatal Stress and Adult Drug-Seeking Behavior: Interactions with Genes and Relation to Nondrug-Related Behavior

By Tod E. Kippin, Jaonnalee C. Campbell, Kyle Ploense, Chris P. Knight, & Jared Bagley

The authors focus on the interaction between early stress and genetic background in determining addiction vulnerability. Prior work by this group and others has indicated that a history of prenatal stress (PNS) in rodents elevates adult drug seeking in a number of behavioral paradigms. This article summarizes work in the area of PNS and addiction models as well as this group's recent studies of PNS on drug seeking in different strains of mice as a strategy to dissect gene–environment interactions underlying cocaine addiction vulnerability. This work suggests that the ability of PNS to alter behavior related to different psychiatric conditions is statistically independent, with similar nonspecific susceptibility to prenatal stress across genetic backgrounds but with the genetic background determining the specific nature of the PNS effects.

Genetic Relationship between the Addiction Diagnosis in Adults and Their Childhood Measure of Addiction Liability

Psychological Entities or Statistical Constructs?

By Sanja Franić, Denny Borsboom, Conor V. Dolan, & Dorret I. Boomsma

This study employed multivariate genetic item-level analyses to examine the ontology and the genetic and environmental etiology of the Big Five personality dimensions, as measured by the NEO Five Factor Inventory (NEO-FFI). Common and independent pathway model comparison was used to test whether the five personality dimensions fully mediate the genetic and environmental effects on the items, as would be expected under the realist interpretation of the Big Five. Applications of common and independent pathway modeling showed that they do not comply with the collinearity constraints entailed in the common pathway model.

Evolutionary Behavioral Genetics

By Brendan P. Zietsch, Teresa R. de Candia, & Matthew C. Keller

The authors describe the scientific enterprise at the intersection of evolutionary psychology and behavioral genetics — a field that could be termed Evolutionary Behavioral Genetics — and how modern genetic data is revolutionizing our ability to test questions in this field. Examples are given of how new data and methods provide insight into the genetic architecture of behavioral variation and what this tells us about the evolutionary processes that acted on the underlying causal genetic variants.

The Role of Parental Cognitive, Behavioral, and Motor Profiles in Clinical Variability in Individuals with

By Michael Vanyukov et al.

Transmissible liability index (TLI) enables quantification of the latent trait of liability to drug use disorders (DUD) in children. TLI has been shown to have high heritability and predict DUD in young adulthood. This study shows that the genetic component of variance in TLI assessed in childhood accounts for over half of the genetic variance in DUD diagnosis and the entire phenotypic relationship between the two liability measures. This validates TLI as an early measure of DUD liability and supports its utility in early-age genetic studies of DUD.

Genetic and Environmental Contributions to Relationships and Divorce Attitudes

By Peter K. Hatemi, Rose McDermott, & Lindon Eaves

Though attitudes about divorce have traditionally been explained by environmental factors, alternative research suggests that genetically influenced psychological dispositions have an important role in divorce and other relationship attitudes as well. The integration of these two lines of research however, remains embryonic. The authors explore how social and genetic factors correlate with each other, and are modified by one another. They find that environmental factors and life events, such as going through a divorce, moderate reported genetic influences on attitudes toward divorce.

CEER Seminar

Testing for Gene-Environment Interactions in Daily Life: What

[Chromosome 16p11.2 Deletions]
By Andres Moreno-De-Luca et al.
This study aimed to 1) investigate the contributors to phenotypic variability in probands with copy number variants (CNVs) involving the same genomic region, 2) measured the effect size for de novo mutation events, and 3) explored the contribution of familial background to resulting cognitive, behavioral, and motor performance outcomes in probands with de novo CNVs. Analysis of families with de novo CNVs provides the least confounded estimate of the effect size of the 16p11.2 deletion on heritable, quantitative traits and demonstrates a 1- to 2-SD effect across all neurodevelopmental dimensions. Significant parent-proband correlations indicate that family background contributes to the phenotypic variability seen in this and perhaps other CNV disorders and may have implications for counseling families regarding their children's developmental and psychiatric prognoses.

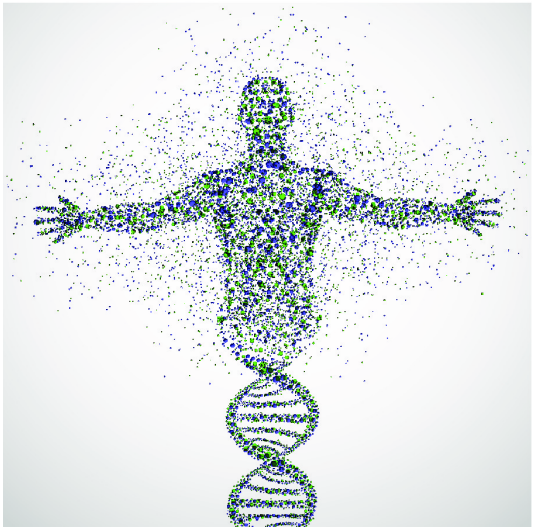
[Intellectual Disability: Novel Mutations in DEAF1 Cause Speech Impairment and Behavioral Problems]
By Sabine Waltl
Mutations affecting the SAND protein domain of DEAF1 cause intellectual disability with severe speech impairment and behavioral problems.

[Mutations Affecting the SAND Domain of DEAF1 Cause Intellectual Disability with Severe Speech Impairment and Behavioral Problems]
By Anneke T. Vulto-van Silfhout et al.

Can We Learn about Antisocial Behavior and Genetic Risk from Adolescents' Mobile Phones?
This talk will share new findings from a genetically informative study to track adolescents' experiences and behaviors in daily life using mobile phones. Evidence of heightened reactivity among adolescents with the DRD4-7 allele to daily triggers will be presented, along with a discussion of how mobile phone-based assessments can be leveraged to advance our understanding of the role of both genes and the environment in shaping antisocial behavior among adolescents.

Candice Odgers, PhD
Associate Professor of Public Policy, Psychology and Neuroscience
Associate Director of the Center of Child and Family Policy
Duke University

Wednesday, February 11 4:00-5:00PM
Rm 405A and B, Educational Center
Irving Institute for Clinical and Translational Research
10th Floor, Presbyterian Hospital (PH) Building
622 W. 168th Street



Recently, researchers identified in two individuals with intellectual disability (ID) different de novo mutations in DEAF1, which encodes a transcription factor with an important role in embryonic development. To ascertain whether these mutations in DEAF1 are causative for the ID phenotype, they performed targeted resequencing of DEAF1 in an additional cohort of over 2,300 individuals with unexplained ID and identified two additional individuals with de novo mutations in this gene. Altered DEAF1 harboring any of the four amino acid changes showed impaired transcriptional regulation of the DEAF1 promoter. The study results demonstrate that mutations in DEAF1 cause ID and behavioral problems, most likely as a result of impaired transcriptional regulation by DEAF1.

To contribute a news item, an academic article, or an event on the ethical, legal, and social implications of psychiatric, neurological, and behavioral genetics research please email us.

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