twin research and humangenetics

The official journal of the International Society for Twin Studies and the Human Genetics Society of Australasia

Covering all areas of human genetics with an emphasis on twin studies, genetic epidemiology, psychiatric and behavioral genetics, and research on multiple births in the fields of epidemiology, genetics, endocrinology, fetal pathology, obstetrics and pediatrics.

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twin research and human genetics

Twin Research and Human Genetics is the official journal of the International Society for Twin Studies and, as such, is the successor journal to Acta Geneticae Medicae et Gemellologiae, which was founded in 1952 by Luigi Gedda. He edited it until its cessation in 1998, with Paolo Parisi as Acting Editor and then Executive Editor from 1968 to 1992. Acta became the official journal of ISTS when the society was established in 1974. The subtitle Twin Research was adopted in 1979. It was published by The Mendel Institute in Rome, except for the years 1979 to 1983, when it was published jointly with Alan R. Liss in New York.

Twin Research itself was founded in 1998 by Robert Derom, who edited it in 1998 and 1999. It has been edited by Nick Martin since 2000. It was published by Stockton Press (which became part of Nature Publishing Group) from 1998 to 2000, and since 2001 has been published by Australian Academic Press.

The title Twin Research and Human Genetics was adopted from the beginning of Volume 8 in 2005 and is a translation of Acta Geneticae Medicae et Gemellologiae, Luigi Gedda's original title.

In 2008, Twin Research and Human Genetics was also adopted as the official journal of the Human Genetics Society of Australasia.

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AN ITALIAN TWIN STUDY ON PSYCHOLOGICAL WELL-BEING IN YOUNG ADULTHOOD

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The twin method was applied to investigate the genetic and environmental architecture of six dimensions of psychological wellbeing (PWB), that is, autonomy, positive relations, purpose in life, selfacceptance, environmental mastery and personal growth, as assessed by the shortest 18-item version of the Ryff's Scales of Psychological Well-Being. The study sample included 742 twins (284 complete pairs, 174 unmatched twins) aged 23-24 years from the populationbased Italian Twin Registry. Zygosity was determined by standard questions regarding physical similarity. Of the 284 complete pairs, 137 were monozygotic (MZ) and 147 were dizygotic (DZ). Out of the 174 unmatched twins, 73 twins were from MZ pairs and 101 from DZ pairs. A confirmatory factor analysis was performed with the software Mplus. Factor scores were derived for the six PWB dimensions under the best-fitting model and were used for biometric analysis. Twin correlations were estimated and interpreted under the assumptions of the twin design. Furthermore, a Cholesky decomposition incorporating additive genetic, nonadditive genetic and unshared environmental latent sources of variance and covariance was fitted to the six PWB dimensions using the software Mx. MZ cross-twin/ within-trait correlations were substantial (range: .33-.65), and resulted higher than DZ correlations (range: .09-.26), suggesting genetic effects on each dimension. Except for autonomy and personal growth that correlated modestly (.28) at the individual level, phenotypic correlations were generally moderate to extremely high (range: .42-.94). Cross-twin/cross-trait correlations were larger in MZ (range: 0.30-0.62) versus DZ pairs (range: .06-.25), pointing to a genetic link between the dimensions. The best-fitting Cholesky model included additive genetic and unshared environmental effects. Genetic factors accounted for a moderate to substantial proportion of variance in the six PWB dimensions, with heritabilities between 37 and 64%. Genetic correlations were very high (range: .77-.99), indicating that genetic factors that influence the expression of the different facets of PWB may be shared to a large extent. Unshared environmental correlations were also substantial to high, with the exception of autonomy with the dimensions of purpose in life (.22), self-acceptance (.09) and personal growth (.01). These findings may guide attempts to design intervention strategies aimed at promoting physical and mental health, which are known to be linked with PWB.

EMOTIONAL AND BEHAVIORAL PROBLEMS AMONG RUSSIAN ADOLESCENT TWINS AS REPORTED BY PARENTS

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The aim of the present study was to assess behavioral and emotional problems in Russian adolescent twins using the ratings of their parents and comparing these to those of their single-born peers. We have also analyzed sex and age differences in the parental scores of adolescents' behavioral and emotional problems. The sample included 490 twin and 540 single-born adolescents aged 10-17 years from different Russian regions. Parents were asked to complete the Child Behavior Checklist (Achenbach T., 1991, Manual for the Child Behavior Checklist/4-18 & 1991 Profile, Burlington: University of Vermont, Department of Psychiatry). No significant differences were found between parental ratings of behavioral and emotional problems of twins and single-born children. Delinquent behavior scores increased with age. Girls scored significantly higher than boys on Withdrawn/Depressed, Anxious/Depressed and Somatic Complains scales; boys scored significantly higher on Attention Deficit/ Hyperactivity Problems, Delinquent Behavior and Aggressive Behavior scales. Girls had significantly higher scores on the

Internalizing scale and boys had significantly higher scores on the Externalizing scale. Overall, the results were in line with those of the most studies conducted in other countries.

HOW DID THAT HAPPEN? CORRECTING ZYGOSITY ASSIGNMENT IN THE VIETNAM ERA TWIN REGISTRY

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- The accuracy of the zygosity classification in twin registers is essential for valid inference. The goal of this study was to evaluate zygosity classification in the Vietnam Era Twin (VET) Registry using DNA markers and construct an updated zygosity classification algorithm for all twins in the Registry. The VET Registry includes 7,369 male twin pairs who served in the military during the Vietnam era. In the late 1980's all twins completed a zygosity questionnaire that included 20 question items; military record information, including blood group, was also available for twin pairs. From in-person studies using the VET Registry twins in the period 1990-2009 DNA was available from 612 twin pairs. DNA microsatellite markers from 28 sites were obtained for each individual and concordance across all sites was used to classify zygosity. Logistic regression was used to construct predicted probabilities of DNA-based zygosity using items from the zygosity questionnaire. Twins were classified according to this new zygosity assessment and compared with the original zygosity assignment using measures of overall agreement, sensitivity, and specificity. The concordance of the original and DNA-based classification of zygosity was high (k = .85, p < .0001) sensitivity for monozygosity was 89.1% (96% CI 86.6-91.1) and specificity was 98.3% (95% Cl 96.6-99.2). Errors in the original zygosity assignment were primarily due to monozygotic twins that were misclassified as dizygotic based on discordant military record blood groups. Removing the military record blood group data from the original zygosity classification markedly improved the accuracy of classification (k = 0.95, sensitivity = 97.5 (95% CI 96.0-98.4), specificity = 97.5 (95% CI 95.5-98.6)). Using the DNA-based zygosity prediction model an updated zygosity was assigned to all pairs in the Registry. In summary, zygosity assigned using responses to twin similarity questions was highly predictive of DNA-based zygosity. Augmenting zygosity classification using administrative data, from military or other records systems, should only be done with considerable caution.

UPDATING ZYGOSITY IN THE UNIVERSITY OF WASHINGTON TWIN REGISTRY

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The assignment of zygosity is essential for any twin registry. The University of Washington Twin Registry was created in the early 1990's as a unique community-based sample derived from drivers license records. Zygosity questions were included in a baseline survey administered to all twins in the Registry. These questions include: peas in a pod similarity and how often parents, relatives, teachers, and strangers have difficulty telling the twins apart. These self-reported questions were used to assign zygosity. Based on recently obtained biological markers we now evaluate and update our zygosity classification. The Registry has enrolled 3,192 twin pairs. Blood samples were collected from 188 same-sex twin pairs who participated in clinical studies using the Registry. These