Up-and-Coming Voices: Genetics Research in Psychological Science

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Image above: A father searches for his missing child using the assistance of the International Committee of the Red Cross during the 1994 Rwandan Genocide. British Red Cross, CC BY 2.0, via Wikimedia Commons.

A Novel EEG-Based Paradigm to Measure Intergroup Prosociality: An Intergenerational Study in the Aftermath of the Genocide in Rwanda • Testing Genetic and Environmental Influences on the Developmental Interplay between Home Chaos and School Achievement from Age 9 to 16 Years • Weighing the Genetic Risk: Associations Between Polygenic Risk Scores for Cardiometabolic Phenotypes and Adolescent Depression and Body Dissatisfaction

Poster presentations enable students and researchers to network and share their research with other psychological scientists from around the world. In this collection, three researchers (two of whom presented at the 2023 APS Annual Convention in Washington, D.C., and one at the 2023 International Convention of Psychological Science [ICPS] in Brussels, Belgium) share their research relating to genetics.
A Novel EEG-Based Paradigm to Measure Intergroup Prosociality: An Intergenerational Study in the Aftermath of the Genocide in Rwanda

Guillaume Pech (Université Libre de Bruxelles), Darius Gishoma (University of Rwanda), and Emilie Caspar (Ghent University)

What did the research reveal that you didn’t already know?

The main finding of this study is that 27 years after the genocide in Rwanda, there is still an observed negative bias in intergroup prosociality between survivors and former perpetrators at both neural and behavioral levels. Specifically, we found that former perpetrators, despite explicitly stating their willingness to favor survivors, experienced more cognitive conflict when actually selecting them.

Furthermore, we discovered that survivors’ and former perpetrators’ children also exhibit the same bias, suggesting a transmission of this intergroup prosocial bias across generations. However, a direct correlation between parents’ bias and their children’s bias does not fully explain the bias transmission and maintenance, implying that other factors, beyond direct parental influence, likely influence the maintenance of biases across generations.

What is the relevance of your findings for the future of genetics research and psychological science as a whole?

This study is of great importance in understanding the transmission of intergroup bias that contributes to the perpetuation of conflicts. By gaining a better understanding of how this bias is transmitted and maintained, we can work toward reducing its impact. Our findings suggest that the transmission of intergroup bias is not primarily due to parental influence, highlighting the need to explore other factors involved. Additionally, our findings provide a method to examine dissociations in intended behavior. We observe differences between participants’ reported intentions and their implicit ease of expressing such intentions. This offers valuable insights into understanding the complexity of intergroup biases.

What are your next steps with regard to this research?

We recently conducted a study in Cambodia in the aftermath of the Khmer Rouge genocide, which occurred between 1975 and 1979. We were able to use the same approach to examine the transmission of the intergroup prosociality bias across three generations in a conflict that took place in a different context. Furthermore, our research endeavors to explore the relationship between intended behavior and real behavior. It is essential to understand any discrepancies that may arise between our intentions and the actual behaviors observed. Therefore, we seek to answer the question of how explicit and implicit intentions of behavior could predict concrete actions with greater accuracy.
Testing Genetic and Environmental Influences on the Developmental Interplay between Home Chaos and School Achievement from Age 9 to 16 Years

2023 APS Annual Convention
Alexandra Starr (University of York), Margherita Malanchini (Queen Mary University of London), Ivan Voronin (Université Laval), and Sophie von Stumm (University of York)

What did the research reveal that you didn’t already know?

Children differ in their school performance: Some learn easily and earn top grades, others struggle to pass the exams and tests. Children’s differences in school performance are caused by an interplay of genetic and environmental factors. In our study, we explored the role of one specific environment: household chaos or the lack of structure and predictability in everyday life that children experience at home. Prior studies often assumed that high levels of household chaos cause children’s poor school performance, but it’s possible that household chaos and school performance are correlated yet one does not necessarily cause the other. Using a longitudinal, genetically sensitive study design, we found that household chaos and school performance had a bidirectional, negative relationship across childhood and adolescence but not because they caused one another.

The effects of household chaos that children experienced on their school performance and vice versa were due to genetic and environmental factors that were common to both constructs. This finding suggests that there is no causal effect from household chaos on school performance. Therefore, household chaos might not be a suitable intervention target to improve children’s educational achievement. The results in this study using data from the UK are in line with my recently published findings on chaos and achievement in a German sample (https://doi.org/10.1016/j.lindif.2023.102287).

What is the relevance of your findings for the future of genetics research and psychological science as a whole?

Finding causal predictors of developmental outcomes is a core aim of psychological science. Parsing the mechanisms behind developmental associations is crucial to design interventions that effectively support children. My co-authors and I focused on disentangling true causal effects from confounding at the family level, such as shared genes and environmental experiences that make two children of a family more similar. Our findings explain how family background inequality becomes transmitted from parents to children, and why some children struggle in school while others excel.

What are your next steps with regard to this research?
Our results highlight that genetic and environmental factors account for the developmental relationship between chaos and children’s achievement. We now need to examine which genetic variants and environmental factors influence development and if they interact. To do so, we aim to integrate molecular genetic data (e.g., genome-wide polygenic scores for educational attainment) and a broad range of measures of the environment in causal inference models in the future. This research will help us create a robust evidence base of the causal factors that give rise to children’s developmental differences. We hope that, in applied settings, these factors will eventually serve as targets for educational interventions.

Weighing the Genetic Risk: Associations Between Polygenic Risk Scores for Cardiometabolic Phenotypes and Adolescent Depression and Body Dissatisfaction

2023 APS Annual Convention
Krista Ekberg, Kristen L. Schneider, and Monika Waszczuk (Rosalind Franklin University of Medicine and Science), Giorgia Michelini (Queen Mary University of London), Daniel N. Klein and Roman Kotov (Stony Brook University), and Andrey A. Shabalin and Anna R. Docherty (University of Utah)

What did the research reveal that you didn’t already know?

Our study found that genetic risk for high body mass index (BMI), as measured by a polygenic risk score (PRS), was significantly associated with phenotypic BMI and body dissatisfaction in adolescents. We also found that the association between BMI-PRS and body dissatisfaction was largely explained by phenotypic BMI. Given that the mediated effect of phenotypic BMI accounted for 58% of the total effect between BMI-PRS and body dissatisfaction, it is possible that environmental factors related to high BMI play a role in the development of body dissatisfaction. Prior research has shown that adolescents who experience weight-related bullying are more likely to have negative body image perceptions. Overall, our findings add to our understanding of the complex relationship between genetics, BMI, and adolescent mental health.

What is the relevance of your findings for the future of genetics research and psychological science as a whole?

Our study emphasizes the importance of interdisciplinary research that integrates molecular genetics and psychology to better understand the underlying mechanisms and interactions between genetic liabilities and mental health outcomes in youth. Notably, the formula to generate BMI-PRS was developed in a large sample of adult participants. Though we observed the research utility of this PRS in youth, future studies should focus on developing an age-specific PRS to enhance our understanding of the genetic basis of disease risk and psychological outcomes at different developmental stages. In the future, this could lead to genetically informed prevention and intervention approaches tailored to specific age groups.

What are your next steps with regard to this research?
Next steps include expanding our work to a longitudinal study to investigate the developmental trajectories of the observed associations between PRS for cardiometabolic traits and adolescent mental health outcomes. In doing so, we can assess temporal dynamics between variables and how these associations unfold over time. Another potential avenue is to test the hypothesized environmental variables that may underlie the relationship between BMI-PRS and body dissatisfaction in youth. In particular, identifying individual and environmental factors that promote resilience and protect against the negative impact of genetic risk on mental health can inform future personalized prevention and intervention strategies.

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