Monograph Matters

SRCD Society for Research in Child Development

Petrill, S. (2023). *Parenting and child outcomes in the context of genetics and the environment*. [Peer commentary on the article "Parenting in the Context of the Child: Genetic and Social Processes" by D. Reiss, J. M. Ganiban, L. D. Leve, J. M. Neiderhiser, D. S. Shaw, & M. N. Natsuaki]. *Monograph Matters*. Retrieved from https://monographmatters.srcd.org/2023/04/18/commentary-petrill-87-1-3/

Parenting and Child Outcomes in the Context of Genetics and the Environment

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Over the past decade the "Big Science" trend has led to ever larger datasets, massive teams of researchers, data harmonization, and an increasing number of meta-analyses and data consortia. This is evident in biomedicine and increasingly common in developmental psychology, neuropsychology, and prevention science. These approaches are, of course, important, necessary, and have led to findings that have moved the field forward. However, massively large samples and combining/comparing across datasets has led to a de-emphasis of deep measurement as well as the longitudinal assessment of the same individuals over extensive periods of development. This is the very type of measurement strategy necessary to identify the parent-, family-, and child-level risk and protective factors upon which genetically informative prevention and intervention methods must be based.

Fortunately, relative to other fields, the parenting literature has retained a focus on measurement, longitudinal assessment, and theory, while, at the same time, incorporating genetically sensitive designs. This has led to studies that incorporate genetically sensitive designs that inform substantive questions directly relevant to the field, not the other way around. At the same time, the parenting literature has been especially adept at incorporating the latest quantitative and molecular genetic designs and adapting to movements in the field of genetics. The field of parenting has also been responsive to changes in best-practices surrounding genetically sensitive designs. For example, beginning in the early 2000s, the parenting literature was increasingly populated by gene x environment interaction studies using single DNA markers. As a result of non-replication and the continued advancements of the field of genetics, the parenting literature has moved towards the use of genome-propensity scores. It is also one of the few fields that continues to employ adoption and twin designs, likely due to fact that, at their core these designs involve families and family relationships.

These strengths are especially evident in the current monograph by Reiss and colleagues (2023). This monograph presents a comprehensive set of findings from the Early Growth and Development Study (EGDS) concerning the genetic, environmental, and social processes of parenting in the context of child outcomes. The authors and their collaborators are to be applauded for the scope, depth, and impact of their work on the larger parenting and child

development literatures. Their findings advance our understanding of the role of genetically sensitive designs not only to disentangle the genetic and environmental influences on parents, parenting, children, and child outcomes, but also to identify meaningful pathways for prevention and intervention.

In particular, the authors present findings and propose approaches that speak directly to the substantive conversations in the basic and applied parenting literatures and demonstrate the added value of genetically sensitive approaches. Of note are the identification of early-appearing adverse genetic and/or prenatal influences, promotive interventions, and the situational use of genetics. Most of all, this monograph helps to dispel two lingering myths that limit not only the use of genetically sensitive designs, but also the importance of genetics to understanding the environment and developmental outcomes. The first myth is that high heritability equals immutability. This has sometimes led to discarding malleable outcomes simply because of high heritability; and has been especially persistent in the academic achievement and personality literatures. However, as demonstrated by the current monograph, in the case of academic achievement, highly heritable measures can be highly malleable. Thus, psychological outcomes are no different from highly heritability outcomes in medicine, such as heart disease, where a high heritability triggers a strong environmental response that can result in substantial phenotypic change.

A second related myth is that genetics predestine a child to be permanently resilient (dandelion) or vulnerable (orchid). As noted in discussion of project MATCH, genetic influences related to parenting and child outcomes are expressed within a highly complex phenotypic network of measures operating at multiple levels of analysis. In this case, genetics operate in a noncausal manner to raise or lower the likelihood of problematic behavior or outcomes. These can be prevented, or changed, or remediated with proper understanding of underlying psychological, genetic, and environmental pathways.

This is in line with developments in precision medicine, which use genetics to identify potential pathways for intervention. One example is the application of genetic testing to assess the suitability of anticoagulants such as warfarin (e.g., Jonas & McCleod, 2009). Here we find that a clear understanding of the phenotype, in this case clotting, is matched with a clear understanding of genetic polymorphisms that would lead to dangerous side-effects of using the drug intervention. Though much more work is needed, the monograph moves the field closer to this kind of integration in the parenting and child socialization literature.

References

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