

**Robert Plomin: Blueprint: How DNA Makes Us Who We Are**  
Cambridge, MA, 2018: The MIT Press,  
266 pp.

This is a book that promises to leave a mark in the academic and public debate. It is an essential addition to the never-ending discussion of nature versus nurture. A contribution in the quest to find an explanation on what determines who we are. As the subtitle suggests, the book focused on how nature paves the way for a person's development. The author seemingly downgrades the role of the environment, but more precisely, he rethinks how it interacts with genes and which environmental setting is the most important. Besides the somewhat controversial and debatable interpretations of the findings, it introduces a set of methodological toolkits of behavioural genetics, enabling an understanding of the progress done so far in this field. For example, the author discusses the twin and sibling studies and exposes the pioneering Genome-Wide Association (GWA) studies and their promises for the future of DNA research. Therefore, the book is an accessible introduction to behavioural genetics that can be read by academic and non-academic readers.

It is divided into two parts, the first titled 'Why DNA Matters' and the second 'The DNA Revolution'. The first part is dedicated to the exposure of his early research, based on the findings derived from studies on twins, siblings, and adoptive children. These research designs make it possible to hold the shared family environment of the children constant and observe how genes or the non-shared environment generate differences between siblings. The non-shared environment refers to the environment outside the family that is not shared by the siblings. For example, the friends they meet, the classroom in the school, or the sports they practice. What is striking is that the findings point to the more substantial effect of genes than pa-

rental upbringing in shaping children's behaviours or outcomes in life (e.g. weight or divorce).

Moreover, the role of the environment is reinterpreted with the introduction of the concept of 'nature of nurture'. It implies that the individual plays an active role in framing the environment, giving it the shape that better fits his/her personal preferences. The individual is understood not as passively receiving the effects of the environment but rather as actively making choices that determine it. The same setting, depending on personal aptitudes, can affect or be shaped by different individuals in a variety of ways. For example, a mother could teach her daughter how to play the piano from an early age, but the child may or may not be receptive to this input. A daughter interested in music would ask for more piano classes and concerts. Conversely, if she is not interested, she would avoid the classes or concerts, trying to allocate her time to other endeavours.

Plomin claims that DNA plays a more significant role in adulthood than in childhood. During childhood, freedom of choice is limited by parents and tutors, narrowing the child's scope to shape daily activities. Conversely, in adulthood, individuals have the freedom to frame the environment based on their individual preferences. Recalling the previous example, the daughter that attended piano classes in her childhood could choose to drop the lessons later in life to focus on other hobbies that better resemble her preferences. Despite the mother's effort, when the daughter can shape her environment individually, she can decide whether or not to follow the path laid out by her parents.

In the second part of the book, Plomin introduces the reader to a different set of concepts and methods. First, Plomin introduces the basic concepts and methodologies in DNA studies to build a common ground of knowledge. He then discusses the Genome-Wide Association (GWA) stud-

ies and how they are revolutionising behavioural genetics, allowing comparisons of the genomes of large samples of individuals. The large-scale associations of the genome, using the DNA of millions of individuals, permit the formation of polygenic scores. It is relevant to note that there is not a single gene that is responsible for a specific psychological trait; rather, a combination of several bits of DNA form the 'polygenic score'.

Understanding where an individual is placed in the normal distribution of a specific polygenic score makes it possible to predict from an early age the development of personality traits, aptitudes, or illnesses. Large samples of individuals are needed to build the relevant polygenic scores. Currently, with more and more data being gathered and with progress in computational power, the construction of these scores is possible for an increasing number of psychological traits.

The implications of GWA studies and the construction of polygenic scores are potentially beneficial. They could be used to detect individuals that are at a high risk to develop a particular psychological illness, making it possible to intervene in their environment early in life and thus reducing the probability of disease occurring. But things are more ambiguous. On the one hand, it could be considered a blessing that these types of breakthroughs are happening, as knowing of a predisposition to a particular kind of mental disease beforehand could effectively prevent its occurrence. On the other hand, knowledge could generate anxieties and frustration. For example, some individuals could find that the polygenic score of their child is low in intelligence or some other relevant psychological trait causing unhappiness and fatalism. Plomin claims that acceptance and understanding from parents could also ease the life of an 'ungifted' child who would have been pressured to achieve what he may not have been able to.

However, an overly deterministic parental stance on the life outcomes of the infant could itself determine the development of a trait in a child.

The interpretations of findings based on the polygenic scores are still in their infancy. Therefore, they need to be taken with caution, as further studies are required to test their validity. Arguably, the more that humankind becomes aware of how nature 'builds us', the more the environment can be framed in a way that accommodates individuals' needs and predispositions. For this reason, the development of more refined methods to explore the genome to discover and prevent the occurrence of psychological illnesses can be considered favourable for enabling further understanding of the gene-environment interaction. However, caution and awareness on the possible misinterpretations of the findings should be maintained so as not to lapse into too common partisan stances on nature and nurture.

In this regard, Plomin seems overly enthusiastic in stating some of his claims. The author shifts from more moderate stances to more radical ones, failing to sound credible throughout the whole book. For this reason, the book oscillates between being a balanced introduction and summary of the research on behavioural genetics and being a manifesto in support of DNA research and its superiority in explaining an individual's life outcomes. The duality of the book is damaging, as some of the interpretations can be considered overstretched and unbalanced, exposing the book to easy criticism and limiting the potential credibility of the whole text and the reach to a wider public. Hence, the discussion of the social implications of the author's findings and their interpretation is essential. What Plomin's work disproves is the assumption that individuals are born as a blank slate. A claim that has been already stated in other contexts and supported by psychologists and neuroscientists such as Steven

Pinker in *The Blank Slate: The Modern Denial of Human Nature* [2002] or, more recently, Kevin J. Mitchell in *Innate* [2018]. In this regard, an individual's genetic background is understood as interacting with the environment, with both determining personal development. Plomin does not deny the environment's role in determining 'who we are', but he reconsiders the interaction between the two. In line with the implications of 'nature of nurture', the individual is seen as actively shaping the environment, and even more so in adulthood, implying that there is not much space left for parenting or schooling in changing certain inherited psychological traits.

Similarly, the environment is considered as unpredictably affecting the individual, mostly based on unplanned, erratic events that happen in the non-shared environment. A question naturally arises. Does Plomin go too far in speculating on the implications of the findings? Arguments such as the irrelevance of parenting or the limited role of the type of schooling in determining psychological traits are difficult to accept, especially for social scientists that have been publishing several studies on the importance of these factors for a child's development.

Therefore, the book's main take-home message is the evidence that individuals are not born as a *tabula rasa*, as genes influence the way a person interacts with the environment. However, the role of the environment is overly reduced by Plomin. Not all interventions are useless in enhancing an individual's quality of life but more needs to be known on which are the most effective factors that can contribute to improving an individual's life outcomes. Therefore, how the environment interacts with genes is still open to debate. In this context, psychologists and social scientists can be motivated to build studies with more robust empirical evidence to support their claims, taking into consideration the possible confounder of genetic background

and the variations in which genes interact with environmental stimuli. First, this would enable studies on nurture, such as ones on the role of parenting or schooling, to build more robust findings and claims, controlling for the effect of genes. Second, how nature and nurture interact with each other in different national, institutional, and cultural contexts needs further explanation so that we can better grasp the various ways in which the two could determine certain psychological traits or outcomes in life across populations. Third, what seems clear is that the never-ending debate on nature and nurture still offers new insights and discoveries that can be particularly vivid in the contemporary academic debate. So, the latest findings and methods available can inspire further studies and conversations and lead to breakthroughs in the understanding of 'what makes us who we are'.

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#### References

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**James S. Fishkin: Democracy When the People Are Thinking: Revitalizing Our Politics Through Public Deliberation**  
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In this ambitious book James S. Fishkin tries to solve one of the biggest problems of modern democracies: 'How to engage the actual will of the people into the political process?' With *Democracy When the People Are Thinking: Revitalizing Our Politics Through Public Deliberation* Fishkin sets the stage for relevant questions that political science litera-