This book is about five huge discoveries in behavioral genetics, most via genomics.

Plomin dedicates a chapter to each. By chapter title and number they are:

3 The nature of nurture
"most measures of the environment used in psychology show substantial genetic influence. What look like environmental effects... are actually genetic effects."

4 DNA matters more as time goes by
"heritability increases through lifetime, especially for intelligence." We become more like our parents the older we get.

5 Abnormal is normal
Behavioral traits appear on a continuum; what used to be diagnosed as diseases such as autism, schizophrenia and bipolar disease, are really only instances at one end of a continuum. Hence the emergence of terms such as "autism spectrum."

6 Generalist genes
There are "robust genetic links between supposedly different traits, suggesting that genetic effects are general across traits, rather than specific to each trait."

7 Why children in the same family are so different
"… Controlling for genetics revealed that environmental influences make children growing up in the same family as different as children reared in different families." He refers to Alison Gopnik's "The Carpenter and the Gardener" analogy. Rather than build a child as a carpenter would build a bookshelf (and as the Soviets hope to build the "new Soviet man"), Gopnik suggested that we train them as a vintner would train a grapevine. Plomin says it is not even that strong. They go their own way. The source he ought to cite is Judith Rich Harris, "The Nurture Assumption" and "No two Alike," with which he seems to be in total accord.

Robert Plomin came along at the right time with the right tools. He was gifted with curiosity, intelligence, drive and congeniality needed to set large projects in motion.

He asked large questions – the kind of questions that required vast amounts of data to answer. He came of age in the computer age. The time he did his graduate work was the period in which the best minds and universities were pouring their energies into UNIX-powered minicomputers. These in turn were used for statistics packages. Plomin doesn't even mention them by name, but the this is the era in which the still dominant SPSS and SAS packages came into being.

Not covered in the book, the time in which he did his graduate work, the 1970s, was a time of great intellectual conflict. In psychology, the environmentalists had reigned since the time of Freud. Psychological theory held that personality was mostly formed by environment. Skinner and Watson of Harvard are both attributed with quotes to the effect of "give me a dozen healthy infants in my own world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist."

This environmental view was woven into the politics of the time. The USSR was committed to their ability to form "the new Soviet man" out of the raw human material they had come to dominate. The Germans attempted to do the same via propaganda. Plomin relates that in 1983 the Soviets received him rather royally in the mistaken belief that his research would support their belief that the impact of heredity decreased as a person aged.

This being the time of the civil rights push in the United States, the American left was firmly committed to environmentalism. The government should control the schools, which in turn would be able to turn out model citizens whatever their genetic background. The Marxists in American academia – Stephen Jay Gould, Stephen Rose and Richard Lewontin - fought viciously against the emerging fields of sociobiology and evolutionary psychology.

The fight was cast as "nature versus nurture." As Stephen Pinker wrote in his 2002 book "The Blank Slate" the liberals had the upper hand on most universities and viciously suppressed opinions with which they did not agree. Most severely attacked were intelligence researchers such as Arthur Jensen and Philippe Rushton, who were forced into less prestigious institutions, turned down by publishers for want of political correctness, and constantly harassed at public appearances.

It took a brave soul to start a career investigating the heritability of psychological characteristics. And Richard Plomin was that brave soul. Just out of graduate school, he initiated an incredibly ambitious program called the Colorado Adoption Project, collecting large amounts of data on adoptive parents, the birth parents of adoptees, and the children themselves. It is a longitudinal study (over time – it continues today) involving a large number of families and a large number of questions being asked. The objective was to tease out the degree to which psychological characteristics – intelligence and behavior – can be attributed to genetics or the home environment.

Plomin moved on to England and initiated another study with the same objective, this one tracking large numbers of twins – identical and fraternal – in a longitudinal study. Identical twins share 100% of their genome, whereas fraternal twins and ordinary siblings share only 50%. Observing how much higher the correlations between behaviors are between identical twins and other sets of siblings gives a measure of how heritable the characteristics are. How attributable they are to genetics. TEDS – Twin Early Development Study.

Plomin is brave, but not a martyr. While he certainly has opinions on race and intelligence, he has no reason to discuss them in this book. The reader is left to his own devices to connect the dots between observable differences in behavior among human groups and the high heritability of behavioral traits that Plomin describes.

The second half of the book is entitled "The DNA Revolution." The science of decoding the human genome has advanced incredibly rapidly over the past few decades. It is 20 years since the genome was first decoded. Now it is economically feasible to decode the entire genome of an individual person.

This is led to genome wide association (GWA) studies of the human genome. Such studies require large numbers of participants and analysis of the six billion genes in each of them. It involves vast amounts of human effort and computer power.

Large sample sizes are required because some of the characteristics to be studied such as autism, Tourette's syndrome and so on do not show up all that often. In order to draw generalizations about them there have to be a statistically significant number of cases.

The major finding that Plomin reports is that almost every psychological variable of interest is influenced by a very large number of genes. He had gone into the study expecting they would find perhaps five or 10 genes for obesity. They knew that there were several genes for intelligence, but they could not imagine how many.

His conclusion is that there are literally hundreds of genes for almost any condition that you might want to measure. They seem to operate additively. As Gregor Mendel found a couple of centuries ago, there are dominant and recessive genes. Each individual carries two copies of a gene, one from each parent. If we call them A and B, there are three ways they can pair up: AA, AB and BB. If A is dominant, it will govern the observable trait in the individual.

Of course it is not that easy. For any given gene, alleles differ in their frequency: it could be 99% A, 1% B or any other mixture. They also differ in their impact on the phenotype – the person carrying the gene.

The bottom line is that for any given characteristic there are hundreds of genes involved, most of them with an influence far less than 1%, and most of them affecting more than one observable trait. It is a fantastically complex puzzle. If there were 160 genes, there would be 2^{160} possible combinations – about the same number as atoms in the world.

Nevertheless, Plomin says that we are making good progress in being able to predict the phenotype from the genotype. He offers himself as a case in point. His genome would predict he would be at the 90th percentile for height and the 94th for weight. In fact, he is at the 90 ninth and 70th, respectively. They can't predict everything, but they can predict quite a bit.

Returning to the fifth big finding stated in the beginning, that parents account for so little of the way kids turn out, Plomin says that DNA accounts for about 50% of personality and the rest can be attributed to non-shared environment. Family counts for very little, except, intriguingly, about 20% for religious and political beliefs.

To me this begs for a longitudinal study. Governments and the media, via school and television, have dramatically increased their influence on the way citizens are formed. I think Bob Dylan was right when he told us 50 years ago that "your sons and your daughters are beyond your command." I do not think it had been as true when people lived on the farm. The family component of shared environment was much more intimate then, and my bet would be that it had a bigger influence.

Many behaviors were less frequent in that era: attention deficit disorder, promiscuity and homosexuality among them. They seemed markedly less common in my youth. It is worth asking the question whether the widespread acceptance of these practices in society has impacted behavior.

A cross-cultural study might also be in order. The singular of data is anecdote – let me describe anecdotally raising a second family in Ukraine. Very few people present themselves as homosexuals. Promiscuity is frowned on; women are quite direct in expressing their desire for marriage. The behavior I observe is closer to the society of my California childhood than that of my Millennial children raised in the nation's capital. Although it would be hard to structure, a study of the cultural influences on a child through media and school – beyond what is taught, except perhaps sex education – might explain what we see.

Plomin is optimistic that DNA will enable us to predict problems before they emerge, and take preventative measures. He darkly predicts as well that there will be "designer babies" as well-to-do parents fertilize a number of embryos and select the best to be implanted in the womb. Given the history of sex selection, one can only presume that this fear is well-founded.

The behavior that he does not discuss is parenting. For several generations now parenting has been increasingly devalued by the society. People in general, and the more intelligent and better educated people in particular, are simply not having children. Without a belief in religion, they don't have a particular impetus to have children. Growing up in

atomistic families in urban environments, and especially incorporating a job as well, deprives the mother of the company of other mothers. Today's mothers feel isolated, unappreciated and overworked. And they are expensive.

Among the unpopular researchers – the kind that Plomin fears being associated with – are Helmuth Nyberg and Robert Woodley of Menie. Their research shows that the general intelligence of populations has been declining since the Industrial Revolution, and that the rate of decline is accelerating. The major factors are the declining fertility of more intelligent people and immigration by less intelligent peoples.

A balance may emerge between the ability to create better genetic specimens of humanity and the decreasing willingness to invest in raising them. Also diminishing is the quality of the society in which they would be reared. I raised a family in the hothouse society of upper-class Washington DC... the Brett Kavanaugh environment, private schools and all. My observation is that the children did not turn out exceptionally well. They got liberally indoctrinated with cultural Marxism and by and large have not gone on to illustrious careers. Bottom line: I think that DNA analysis will bring some benefits, but it will likewise bring disappointments and it will not turn around the decay of society.

But that's the big picture. This is an extraordinarily good book for the clarity with which he describes the research, and the importance that he ascribes to DNA, our inheritance, our "blueprint."