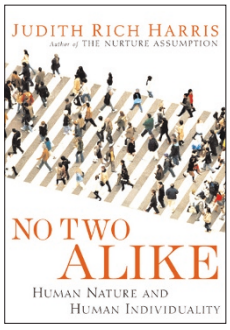
The same, but different



No Two Alike: Human Nature and Human Individuality

By Judith Harris

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Reviewed by Dorret Boomsma

Not every complex trait is heritable, and high heritability does not equal high predictability. The discordance of genetic clones is the focus of Judith Harris's second book, *No Two Alike*. Why do monozygotic twins differ in behavior and personality (and, one might add, in their risk of developing schizophrenia, other psychopathologies, or cardiovascular disease)?

In *The Nurture Assumption* (1998), Harris explored the etiology of familial resemblances in personality and concluded that there are no contributing factors beyond genetic inheritance to familiarity. In her new book, she examines theories of personality to explain why no two people are alike. Drawing mainly on behavioral genetics and evolutionary psychology, she tries to solve the mystery of human individuality—which she limits to differences in personality—leaving other dimensions of individuality (cognition, for example) largely unexplored. Harris states that any theory of personality development cannot be successful if it cannot explain the personality differences between identical twins. Scientists and others tend to focus on the striking similarities in personality between monozygotic twins. These are entirely due to their matching genotypes. But a successful theory also needs to explain the personality differences between twins and between people who are not twins, and it has to explain them in a way that makes evolutionary sense.

In the first chapters of *No Two Alike*, Harris chases various explanations and refutes five 'red herring' theories of personality differences, including differences in the home environment, in nurture (the part of the environment provided by parents), gene-environment interactions and correlations and birth order differences within families. Prevailing theories of development, such as the theory that children are socialized by their parents, lead to the prediction that being reared by the same parents would make children more alike, or that being treated differently by parents will make children different from each other. Behavioral genetic studies of twins, adoptees and identical twins reared apart show this is not the case. Parents treat their offspring differently, but the differential treatment is a consequence of personality (and other) differences between siblings, rather than a cause. Nor can genotype-environment correlation, which refers to the association that occurs when a person's genes shape his environment, provide an answer to Harris's quest: she wants to know how environment shapes differences in personality and not how genes shape personality, possibly through environment.

The chapters on gene-environment interaction and birth order differences within families contain some fascinating detective work. Harris first focuses on the often-cited work of Stephen Suomi on genotype-environment interaction in monkeys. She describes her difficulties in tracking down the exact number of participants in these studies. She tries to find peer-reviewed papers and attempts to obtain the information by contacting Suomi and his coauthors by e-mail and phone. This proves unsuccessful. Based on the information available to her, she concludes that the number of monkeys used in these studies is very likely to be too small to draw any conclusions regarding gene-environment interaction.

Systematic evaluation of within-family differences is possible by looking at birth order. This provides a unique way to separate the effects of within-the-family environmental differences from those of outside-the-family differences (being a firstborn only really matters at home). Most of the evidence that birth order might matter comes from an eminent advocate of this theory, Frank Sulloway. However, as Harris documents, Sulloway refuses to share his data with other researchers. Again, the evidence seems weak or even nonexistent.

Evolutionary psychology, with its emphasis on what humans have in common, may not seem a promising route to solve the riddle of human individuality. Harris solves this problem early on by suggesting that human brains are shaped to recognize differences among people. She proposes three distinct brain systems as the molders of personality: a relationship system that allows babies to discriminate between family and strangers and later allows us to archive information on discrete individuals. The second and third are a socialization system and a status system by which individuals acquire self-knowledge by measuring how they stand up against others. The status system, in collaboration with the relationship system, is the most promising mechanism to explain personality differences. Identical twins will be seen as different individuals by the relationship systems of the members of their community. Small differences between them will be used to distinguish them and their own status system will motivate them to respond to these distinctions.

I very much enjoyed reading this book, although I liked the first part more than the second. Do the status and the relationship systems really explain why identical twins raised together have distinct personalities? Harris focuses almost exclusively on environmental explanations to dissect differences between monozygotic twins. An important assumption in this enterprise is that the extent to which monozygotic twins differ from each other must be due to exogenous environmental differences, which may be small initially and are amplified through life. Might monozygotic discordance also be due to endogenous factors, somatic mutation and recombination, or differences in tissue-specific methylation patterns? Any of these mechanisms might lead to a difference in phenotype. There are some well-documented examples such as differences in X inactivation patterns between female monozygotic twins. The challenge is for twin researchers, and others, to find new techniques to exploit this superb natural experiment.

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