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Spontaneous Drawing and the Individuality of Twins

L. Gedda

The Mendel Institute, Rome

Only rarely have geneticists, neurobiologists and psychologists availed themselves of twins for the study of the human mind's individuality. I believe, on the contrary, that twin data represent an invaluable means of research also for phenomena connected with human individuality and the functioning of the nervous system.

To this end I thought of having MZ and DZ twins take a creativity test by means of spontaneous drawings of a single subject applied to individual MZ and DZ twin pairs.

The preselected twins totalled 31 MZ and 13 DZ pairs of an age span during which the twins live together and experience the same environmental influences.

	MZ pairs	DZ pairs	Total	
MM pairs	14	A		
FF pairs	17	6	23	
MF pairs		3	3	
Total	31	13	44	

Table 1 - The twin sample

The creativity test I devised consists of asking the twins to make a drawing of the family mealtime scene at which they all participate. The drawings were to be made on identical pieces of white paper, selecting colors from the same box of colored pencils given to each of them. When the test was explained, each twin was placed in a different room with no possibility of communication, and was asked to make the drawing, supervised at a distance by an assistant.

In order to analyze the drawings, I established ten parameters: 1) First impression at a glance; 2) Choice of colors; 3) Choice of perspective; 4) Choice of persons' positions; 5) Emphasis on twins; 6) Shape of table; 7) Table settings and food dishes; 8) Room furniture; 9) Drawing of building; 10) Landscape.

Table 2	2
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No. of different parameters		 MZ pairs	DZ pairs				Total	
	MM	FF	Total	MM	FF	7 MF	Total	pairs
0		2	2					2
1	1		1					1
2		4	4	1		1	2	6
3	1	1	2					2
4	2	3	5	1			1	6
5	2	2	4	1	1	1	3	7
6	3	1	4		3		3	7
7	1	2	3		1		1	4
8	1		1			1	1	2
9	1	2	3	1	1		2	5
10	2		2					2
Total	14	17	31	4	6	3	13	44
MZ C = 2/31 =	= 6.45%	$\bar{X}_{MZ} = 5.0$	DZ C=	= 0/13 = 0%		$\bar{X}_{DZ} = 5.7$	Total	
MZ $D = 29/31$	=93.55%	$S_{MZ} = \pm 2.8$	DZ D=	= 13/13 = 100%	1	$S_{DZ} = \pm 2.2$	C = 2/44 = D = 42/44 = 0	4.5% =95.5%

The analysis of the drawings allows the following observations:

1. At first glance, there exists a surprising diversity between the drawing of the first twin and that of the second (see A vs B in Figs. 1-4).

2. The specific analysis of concordance (C) and discordance (D) shows the following values: MZ twins, C = 6.45%/D = 93.55%; DZ twins, C = 0%/D = 100% (Table 2).

3. The discordance between cotwins may vary from no parameter to all parameters with an average of 5.0 parameters for MZ twins and 5.7 parameters for DZ twins (Table 2), suggesting the presence of a slight genetic component.

4. The very small values of concordance in MZ and in DZ pairs, as well as the average of discordant parameters in the two zygosity groups testify to the creativity of each individual twin.

5. The twins' individual creativity is shown by the different choice of the cotwins on the same parameters in pairs of all sex combinations.

6. Research on individual creativity by means of the spontaneous drawing test of a given subject in MZ and DZ twins shows the existence of an epigenetic component that is superimposed on the genetic component and individualizes the phenomenon of creativity.

7. The genetic component relates to the identicalness of the nervous system structure, and in general to the phenotypic identicalness of MZ twins, while the epigenetic component individualizing each twin is obviously of extragenetic origin.

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Fig. 1, A and B. Male MZ cotwins, 6 years old



Fig. 2, A and B. Male MZ cotwins, 9 years old



Fig. 3, A and B. Female MZ pairs, 9 years old



Fig. 4, A and B. Female MZ pairs, 9 years old