

PSYCHOMOTOR DEVELOPMENT AND THE POSTNATAL FATE OF CHILDREN FROM MULTIPLE PREGNANCY

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The psychomotor development of 130, one- to nine-year-old children was followed. Their development was not, as a rule, found to occur abnormally.

The further development of twins was found to be in close correlation:

- (1) with the condition after birth (43% of complications in the further development of children having at birth a 1-7 Apgar score);*
 - (2) with the weight at birth (35.2% of complications in a weight group of 1001-1500 g): this is connected with dystrophy and prematurity;*
 - (3) with the order in which the twins were born.*
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The development of twins is interesting because of its biology and of the effect of multiple pregnancy on ontogenetic development. In the prenatal period twins subsist under different conditions determining the dynamics of their both physical and mental further development (Bogdanowicz 1972).

The present study aims at analysing the psychomotor development and the fate of twins in correlation with the condition of the neonates after birth, the degree of their maturity, their weight, and their birth order.

MATERIAL AND METHODS

The psychomotor development of 130, one- to nine-year-old children, was followed up; they were reported for examination among 669 twins born in 1962-1972 in the 2nd Clinical Department of Obstetrics and Gynecology of the Silesian Academy of Medicine in Bytom.

The control examinations involved many medical specialties, measurements of body height and weight, and traits of personality. Apart from that, a detailed interview concerning the periods of the child's development in its social environment was taken.

The development — assessed in correlation with the condition after birth, weight, degree of maturity (Lubchenco et al. 1963, Bogdanowicz 1972), mode of delivery, order of birth — was summed up in tables, and the development of twins from same-sex and opposite-sex pairs was analysed at the same time. Care for the child, maternal efforts, and progress in learning, were also taken into account.

RESULTS

In Table 1 the development of twins is presented in correlation with their condition after birth; it results from this correlation that the greatest amount of complications

Table 1. *Development of Twins according to Condition after Birth*

Development	Condition (Apgar score)			Total
	1-3	4-7	8-10	
Psychomotor retardation		1	3	4
Speech retardation			2	2
Speech abnormalities		1	1	2
Sight defects	1	4	4	9
Early childhood cerebral palsy		1		1
Special school		1	1	2
Hyperexcitability		3	1	4
Anxiety		2	1	3
Nocturnal enuresis		3	3	6
Heart disorders	2	6	1	9
Other complications	2		5	7
Complicated development	5 (39%)	22 (43%)	22 (33%)	49 (38%)
Uncomplicated development	8 (61%)	29 (57%)	44 (67%)	81 (62%)
Total	13 = 0.1	51 = 0.39	66 = 0.51	130 = 1.00

(43%) was shown by children born with an assessment of 4 to 7 points. This is in agreement with literature data and points to chronic intrauterine anoxia in connection with gestational pathology (Beintema 1968, Osuch-Jaczevska 1968).

Table 2 shows the development of twins in relation to the order in which they were born and the mode of delivery. It was found that twin II had 6.6% more developmental complications (22.3%) as compared with twin I (15.5%), irrespective of the kind of delivery.

Table 3 describes the development of twins from same-sex and opposite-sex pairs taking weight into account. Twice as many development disturbances were noted in same-sex twins (25.4%) as compared with opposite-sex ones (12.3%), irrespective of weight.

Table 4 shows the development of full-term (29.23%), dystrophic (33.07), and premature (37.7%) twins, taking into account the kind of nutrition (natural, 20%; artificial, 59.2%; mixed, 20.8%) and of the care for the children (crèche, 19.2%; care at home, 80.8%). The greatest percentage of infants fed with human milk were full-term babies, and those artificially fed were premature infants. The greatest amount of developmental complications was found in infants with low birth weight (dystrophic, 44.2%) and premature infants (42.8%). Good progress at learning was found in 65.9%, medium progress in 25.5%, and poor progress in 8.6% of the twins, two of whom attended a special school. The body height and weight of the children embraced by the examinations were worked out in terms of percentile values for Polish children. Deficiencies in stature were found in 18 children; 14 of them, who during the two first years compensated body height in comparison with full-term infants or had small deficiencies of stature, showed normal body height during control examinations. Great stature deficiencies in infancy (above the 10th percentile) were not compensated even in later age. Body-weight deficiency

Table 2. *Development of Twins according to the Mode of Delivery*

Development	Mode of delivery					
	Twin I			Twin II		
	Spontaneous	Obst. interv.	Total	Spontaneous	Obst. interv.	Total
Psychomotor retardation	2		2	1	1	4
Speech retardation	1		1	1		2
Speech abnormalities					2	2
Sight defects	2	1	3	2	4	9
Early childhood cerebral palsy		1	1			1
Special school	1		1		1	2
Hyperexcitability		1	1	2	1	4
Anxiety		1	1	1	1	3
Nocturnal enuresis	2	1	3	2	1	6
Heart disorders	4		4	3	2	9
Other complications	2	1	3	4	4	7
Complicated development	14 (32%)	6 (31%)	20 (32%)	16 (39%)	13 (50%)	49 (37%)
Uncomplicated development	30	13	43	25	13	81
Total	44 = 0.34	19 = 0.15	63 = 0.49	41 = 0.31	26 = 0.20	67 = 0.51
						130 = 1.00

Table 3. *Development of Twins from Same-Sex and Opposite-Sex Pairs according to Birth Weight*

Development	Birth weight										Total		
	Twins from same-sex pairs					Twins from opposite-sex pairs							
	1001-1500	1501-2000	2001-2250	2251-2500	Over 2500	Total	1001-1500	1501-2000	2001-2250	2251-2500		Over 2500	Total
Psychomotor retardation				1	2	3					1	4	
Speech retardation				1		1					1	2	
Speech abnormalities	1	1				2						2	
Sight defects	4	2	1			7	1	1			2	9	
Early childhood cerebral palsy							1				1	1	
Special school													
Hyperexcitability	2	1	1			4						4	
Anxiety	1		1			2	1				1	3	
Nocturnal enuresis	2		1			3			2	1	3	6	
Heart disorders	2	3			1	6	1	2			3	9	
Other complications	1	1	2	1		5	1		1		2	7	
Complicated development	1 (29%)	13 (45%)	9 (45%)	7 (44%)	3 (37%)	33 (42%)	2 (40%)	4 (33%)	2 (18%)	4 (28%)	2 (20%)	47 (36%)	
Uncomplicated development	4	16	11	9	5	45	3	8	9	10	8	83	
Total	5 = 0.04	29 = 0.22	20 = 0.15	16 = 0.12	8 = 0.06	78 = 0.6	5 = 0.04	12 = 0.09	11 = 0.08	14 = 0.1	10 = 0.76	52 = 0.4	130 = 1.00

Table 4. *Development of Twins according to Degree of Maturity*

Degree of maturity	Mother's efforts			Mode of feeding			Care for the child			Development		Progress at school ^a			Physical development					
	Makes efforts	Does not make efforts		Breast	Artificial	Mixed	Home care	Crèche	Kinergarten	Normal	Complicated	Good	Mediocre	Poor	Normal	Overweight	Underweight	Stature		
Full-term [N = 38 = 29.23%]	18	20		10	22	5	31	7	29	30	8	12	3	2	32	2	4	33	1	4
Dystrophic [N = 43 = 33.07%]	24	19		7	22	15	35	8	12	24	19	11	4	1	37	—	6	38		5
Premature [N = 49 = 37.70%]	25	24		9	33	7	39	10	20	27	22	8	5	1	42	—	7	40	—	9
Total [N = 130]	67	63		26	77	27	105	25	61	81	49	31	12	4	111	2	17	111	1	18
	51.5	48.5		20.0	59.2	20.8	80.8	19.2	46.9	62.3	37.7	65.9	25.5	8.6	85.4	1.5	13.1	85.4	0.8	13.8

^a Analysis limited to the 47 children in school age

in comparison with body height was found in 17 twins, 8 of which attained normal stature. Two children had overweight in comparison with body height.

A lesion of the central nervous system in the shape of early infantile cerebral palsy was found in one set of opposite-sex twins.

Defective sight deficiencies (6.9%) were among the most frequently encountered deviations (strabismus, astigmatism, myopia, one-sided blindness).

Hearing defects and speech abnormalities, such as lisping, blurred speech, were found in 4 children with low weight at birth. In children with simultaneous speech and hearing troubles, motor disturbances were noted (left-handedness, insufficient movement coordination, monkey shape).

Retardation in psychomotor development was found in 3% of cases.

At the time of the study 36.2% of the children have attained school age: of these, 2 attended a special school, 2 made poor progress at school, 12 showed medium progress, and 31 learned well or very well.

Behavior disorders were found in 10% of children with low weight at birth.

Heart disorders amount to 4.6% of development disturbances.

DISCUSSION

It was not found that the development of children from multiple pregnancy as a rule occurred abnormally (Bogdanowicz 1972).

Disturbances in development usually involve children with low weight at birth; the percentage of these in multiple pregnancy amounts to 70-80% according to various authors (Knobloch et al. 1956, Lubchenco et al. 1963, Bogdanowicz 1972, Janus-Kukulska and Kiepuska-Zdzienicka 1972, Kurniewicz-Witczakowa et al. 1972, Lis and Janus-Kukulska 1972, Sklad 1972, Slenzak et al. 1972). In the present material there were 33.07% of dystrophic children and 37.7% of premature infants: this has a bearing on the further development of these twins. Remarkable is the divergence in development connected with the fact that these children are twins (Bogdanowicz 1972, Sklad 1972).

That is why the development of each child was treated separately, taking into account the specific conditions for this child in the perinatal period and after birth. It was found that the further development of the twins is in close correlation (1) with the condition after birth (43% of complications in the further development of children born with an assessment of 1-7 points); (2) with the weight at birth (35.2% of complications in a weight group of 1001-1500 g), and this in connection with dystrophy and prematurity; and (3) with the order in which the twins were born.

In agreement with the reports in the literature (Kurniewicz-Witczakowa et al. 1972, Sklad 1972) it was found that children born as the first ones develop better than the second ones. This regularly applies also to opposite-sex twins, in whom less developmental complications occur than in same-sex ones. This holds for both physical and mental development. According to Kurniewicz-Witczakowa et al. (1972) and Sklad (1972) the development of 70% of the twins observed is below the normal level (weight-and-stature deficiencies), the latter being however compensated with time by a majority of children. The twins analysed exhibited weight- and stature deficiencies only in 26.8% at the time of their examination. Mental dullness, sight defects, and emotional troubles, were mainly found

in children with low weight at birth; this was set in connection with anoxia during pregnancy. The authors who studied the development of premature infants (Knobloch et al. 1956, Janus-Kukulska and Kiepuska-Zdzienicka 1972, Lis and Janus-Kukulska 1972) found lesions of the central nervous system in 12.3% to 32.8% of cases.

CONCLUSIONS

1. The development of twins depends on birth weight and the condition after birth.
2. Twins born as the first infants and in an opposite-sex pair develop better, irrespective of weight.
3. The analyses of motor and mental development should be made for each twin separately, taking into account its conditions in the fetal, perinatal, and later period.