

# DEVELOPMENT OF PREMATURE TWINS WITH DISSIMILAR BIRTH WEIGHT

## II. Mental Development

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*In follow-up psychological examinations of two groups of premature same-sex twins in preschool and school age (18 pairs with dissimilar and 15 pairs with similar birth weight), intelligence, visual and auditory perception, and drive, were evaluated.*

*The twins with lower birth weight usually attained lower IQs than their cotwins with higher birth weight, and nearly as a rule had poorer IQs of Verbal and Performance Scales. They also more often were hyperactive and had concentration difficulties. There were no differences in visual and auditory perception.*

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Following our first research on physical development (see p. 120), mental development has been studied in two groups of same-sex premature twins: group A, consisting of a sample of 18 pairs of twins born with dissimilar weight ( $A_1$  twins with a lower birth weight than their  $A_2$  cotwins), and group B, consisting of a control sample of 15 pairs of twin partners born with similar weight.

Intelligence and development quotients (IQ and DQ) were assessed by means of the Wechsler Intelligence Scale for Children (over 5 years of age), the Terman-Merrill Intelligence Scale form L (3-5 years), and the Gesell Scale (up to 3 years). Visual and auditory perception were assessed by means of Bender and Stambak tests, respectively. Drive disturbances were also considered.

### RESULTS

The results are shown in Tables 1 to 3. It may be noted that, both in groups A and B, IQ values basically fall within the limits of a normal distribution. Although the mean value appears to be 5.8 points lower in  $A_1$  twins with respect to their  $A_2$  partners, the difference is not statistically significant. However, differences of nearly 15 points (i.e., close to, or exceeding, the standard deviation of the test) are found, to the disadvantage of the dystrophic twin, in 8 A-group pairs, whereas only slight differences appear in the control group (Table 1).

The analysis of the Verbal and Performance Scale of the Wechsler test (Table 2) shows that, in the majority of cases, dystrophic twins have lower IQs, as compared to their cotwins, in both scales.

The analysis of the Gesell Scale shows that, in 4 out of 6 cases, dystrophic twins have poorer DQs and results in such spheres as: adaptive behavior, language, and personal

Table 1. *Mental Development*

Group A [N = 18]					Group B [N = 15]				
Twin pair	Age	IQ and DQ		Difference	Twin pair	Age	IQ and DQ		Difference
		A <sub>1</sub>	A <sub>2</sub>				B <sub>1</sub>	B <sub>2</sub>	
<i>M. M-R</i>	7.10	90	96	6	<i>Zy. M-B</i>	6.8	81	83	2
<i>Sz. M-A</i>	4.3	106	119	13	<i>Za. D-M</i>	10.5	132	137	5
<i>Da. D-E</i>	5.8	85	93	8	<i>Do. J-A</i>	2.1	98	96	2
<i>To. L-K</i>	3.5	80	97	17	<i>Pr. P-P</i>	2.0	89	102	13
<i>Ro. M-A</i>	6.2	80	79	1	<i>Ko. S-J</i>	3.5	105	102	3
<i>Smo. A-I</i>	2.3	105	113	8	<i>Saw. A-G</i>	5.8	110	110	—
<i>Gur. P-P</i>	11.3	102	117	15	<i>God. I-J</i>	9.1	112	100	2
<i>Zbier. M-G</i>	2.4	112	112	—	<i>Kra. P-P</i>	11.5	120	121	1
<i>Rut. G-Z</i>	15.0	121	125	4	<i>Kul. J-P</i>	3.1	91	91	—
<i>Wysz. W-M</i>	10.9	97	109	12	<i>Rub. P-P</i>	6.3	90	84	6
<i>Rul. M-M</i>	8.9	89	110	21	<i>Zass. M-I</i>	8.1	77	87	10
<i>Gust. P-P</i>	4.5	60	87	27	<i>Bal. M-S</i>	9.7	88	98	10
<i>Br. M-S</i>	2.6	97	97	—	<i>Wis. A-K</i>	6.6	102	104	2
<i>Dabr. A-M</i>	3.11	98	104	6	<i>Kor. V-D</i>	3.3	86	92	6
<i>Mich. P-P</i>	2.3	100	82	18	<i>Ban. P-P</i>	3.6	100	100	—
<i>Str. A-G</i>	12.5	109	111	2					
<i>Ziel. R-J</i>	10.2	94	77	17					
<i>Zmu. B-R</i>	11.11	92	93	1					
Total		1717	1821				1481	1507	
<i>M</i>		95.4	101.2	5.8			98.7	100.5	1.8
			98.3					99.6	

social maturity. No difference is found between twin partners in the control group. As also shown by Table 2, no difference is found with respect to visual perception, as evaluated by Bender test, while ambiguous results are obtained with respect to auditory perception, as evaluated by Stambak test.

The analysis of drive and of drive disorders, consisting in all cases in hyperactivity and concentration difficulties, indicates that drive disturbances are more frequent in dystrophic twins than in their partners (Table 3).

#### DISCUSSION AND CONCLUSIONS

The results of the psychological examinations show that group-A twins born with a lower weight nearly as a rule have lower IQs or DQs than their cotwins with higher weight, although the differences are not statistically significant. Similar results were obtained by Babson et al. (1964), Drillien (1964, 1970), Churchill (1965), and Babson and Kangas (1969). In our study, however, the differences between the mean IQs of the cotwins are nearly twice as high (5.8 points) than in the Babson and Kangas' study (3 points). The extent of these differences appears more clearly when they are compared with mean difference (1.8 points) found in the control group, i.e., between twins with similar birth weight.

Table 2. Verbal and Performances Scales, Visual Perception, and Auditory Perception

		Group A [N = 10]										Group B [N = 9]									
Twin pair	Verbal scale		Performance scale		Bender test <sup>a</sup>		Stambak test <sup>b</sup>		Twin pair	Verbal scale		Performance scale		Bender test <sup>a</sup>		Stambak test <sup>b</sup>					
	A <sub>1</sub>	A <sub>2</sub>	A <sub>1</sub>	A <sub>2</sub>	A <sub>1</sub>	A <sub>2</sub>	A <sub>1</sub>	A <sub>2</sub>		B <sub>1</sub>	B <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>				
<i>Da. D-B</i>	87	84	89	104	N	N	N	N		94	103	85	93	-1	-1	N	N				
<i>Gwr. P-P</i>	95	115	110	115	-1	N	-2	N	<i>God. I-J</i>	120	105	101	94	-1	-1	-3	-1				
<i>M. M-R</i>	87	94	94	100	N	N	N	N	<i>Kra. P-P</i>	128	129	110	107	-1	N	N	-5				
<i>Ro. M-A</i>	80	76	83	86	-1	-1	-	-	<i>Sam. A-G</i>	106	115	113	103	N	N	-1	N				
<i>Rud. M-M</i>	97	114	82	104	N	N	-2	N	<i>Wis. A-K</i>	100	101	104	106	N	-1	-	-				
<i>Rut. G-Z</i>	114	118	125	128	N	N	-	-	<i>Za. D-M</i>	130	142	128	125	N	N	-	-				
<i>W<sub>ysq.</sub> W-M</i>	92	108	103	108	N	N	-	-	<i>Zy. M-B</i>	80	89	86	80	N	-1	N	N				
<i>Ziel. R-J</i>	91	80	99	78	-3	-3	-3	-4	<i>Zas. M-J</i>	89	92	69	83	-1	N	N	-1				
<i>Zmu. B-R</i>	97	108	87	78	N	N	-4	-6	<i>Rub. P-P</i>	95	87	86	83	N	N	-	-				
<i>Str. A-G</i>	119	124	97	94	N	N	-4	-5													

<sup>a</sup> In the Bender test the figures mark the standard deviation

<sup>b</sup> In the Stambak test the figures mark the degree of retardation in years

N = normal for given age

Table 3. *Psychomotor Drive*

Characteristics of drive in twins	No. of cases	
	Group A	Group B
The smaller of the twins has disorders of drive	13	6
The larger of the twins has disorders of drive	1	6
The twins show similar traits of drive	4	3
Total	18	15

The analysis of the IQs of the Verbal and Performance Scale of the Wechsler test shows that in both scales the dystrophic twins often have lower IQs than their cotwins. Similar results for the Performance Scale were obtained by Churchill (1965).

Also when psychomotor drive is considered, the dystrophic twins more frequently show traits of hyperactivity and concentration difficulties.

The present results support the opinion, expressed by Winick (1969) and other researches, that dystrophy at birth exerts a disadvantageous effect on mental development, and it seems appropriate to extend it to psychomotor drive.

Although in no case developmental differences between the cotwins did attain the level of statistical significance, it is worth mentioning that lower IQs were more often found in dystrophic twins when (*a*) the degree of dystrophy was greater, (*b*) physical development in the pair's first year of life had been dissimilar, and (*c*) in similar twins.