

THE TREATMENT OF MENTAL DEFECTIVES WITH GLUTAMIC ACID

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INTRODUCTION.

BECAUSE of the professional and lay interest in the potential value of glutamic acid in the treatment of mental deficiency the present study has been conducted.

From the section of Lennox Castle Institution, which is devoted to the training and treatment of Male Juvenile Mental Defective Delinquents, 30 patients were chosen. Half of these were treated with glutamic acid and half used as controls.

The analysis is based upon comparison between experimental and control group rather than between paired individuals. As may be seen from the table, the two groups are very similar. There is no significant difference in the age, intellectual capacity, social background or environment.

Comparison of Groups.

	Experimental group.	Control group.
Average age	12 yrs. 2 months .	12 yrs. 6 months
Average residence in the Institution	10 months .	11 months
Average I.Q.	62 .	64
Average practical ability	76 .	76

Throughout the entire period of investigation experimental and control cases were inmates of the same Institution, receiving the same training, care and diet, the latter being prepared in the central kitchen, and attending the same Institution school. In that way we tried to obtain an adequate "background" for our investigation.

All these boys were without signs of organic brain lesion. There were no epileptics among them.

The fact of institutionalization indicates that they were maladjusted and in need of regular supervision. They were delinquents or presented serious behaviour difficulties at home.

All are educable, and the majority leave at the age of sixteen for employment under ordinary conditions.

TESTING.

To assess their I.Q., Cattell Test IA was given before the beginning of treatment and Cattell Test IB after treatment, since the norms for Form IB, which is an equivalent for retesting purposes, make allowance for practice effects following testing on Form IA.

At the same time they were tested for P.A. (practical ability) with the Passalong Test.

METHOD OF ADMINISTRATION OF GLUTAMIC ACID.

Glutamic acid was administered in tablets (Parke, Davis & Co.), each containing 0.5 grammes ($7\frac{1}{2}$ grains) of the naturally occurring dextro-rotatory substance. The daily dose was 9 gm. (6 tablets *t.i.d.*) for the first 4 months and 12 gm. (6 tablets *q.i.d.*) for the subsequent 6 months. There were no side-effects. On no occasion has a boy refused to take the glutamic acid tablets or shown any gastric distress.

The snag is the high cost of treatment, the cost of keeping each patient supplied with glutamic acid being approximately £1 per week. For that reason the application of glutamic acid had to be confined to a small group of 15 mental defectives.

RESULTS.

Four out of fifteen boys treated with glutamic acid for ten months gained in I.Q. from 8 to 11 points, while none of the control boys showed a gain of more than 2 to 3 points, which is not beyond the experimental error in measurement.

The gains in P.A. (practical ability) measured by the Passalong Test were not so marked; the control group appeared to gain about as much as the experimental group. The gains may be, therefore, practice effects.

Mental deficiency is first and foremost a social concept, behaviour being of paramount importance as regards fitness for normal life. In this investigation the social aspects have been noted; i.e., the general behaviour in the villa where the boys live and the progress at school or work in our occupation centre and simple domestic routine work.

In 8 of 15 boys in the experimental group there was a definite improvement in general adjustment observed by myself, the teachers and male nurses. Their behaviour was improved, they were more alert, self-confident and showed more interest, while none of the control boys showed such marked changes.

SUMMARY.

Fifteen feeble-minded, maladjusted boys were treated with glutamic acid for 10 months, with an I.Q. before treatment, ranging from 54 to 76 (only one boy had an I.Q. of 48) and ranging in age from 10 to 15 years. All these boys were without signs of organic brain lesion. There were no epileptics among them. In 8 of these 15 boys there was a definite improvement in general adjustment; 4 out of these 8 boys gained in I.Q. from 8 to 11 points, while the improvement of the control boys was negligible.

I am indebted to Dr. J. T. Curran, Medical Superintendent of Lennox Castle Institution, for permission to conduct the treatment, and for his interest in the experiment and his valuable advice. My thanks are also due to the staff and the teachers in Lennox Castle Institution for their assistance.

Boys on Glutamic Acid Treatment.

Patient.	Admitted.	Age at beginning of treatment (Jan., 1950).	Previous history (before admission).
1. R. S— .	17.x.49	15 years	Indecent assault on little girls.
2. W. E— .	25.x.48	11 "	Stealing and wandering.
3. A. C— .	16.viii.48	15 "	Stealing. Broken home (father in jail, mother dying of T.B.).
4. J. G— .	29.xi.48	10 "	Neglected. Parents divorced.
5. R. B— .	25.x.48	13 "	Stealing. Truancy.
6. A. M— .	11.xi.48	12 "	Beyond home control. Truancy, wandering.
7. D. T— .	26.x.49	14 "	Stealing, truancy. (Head teacher) —violent and aggressive, not amenable to discipline. Evil influence.
8. E. F— .	7.xi.49	11 "	Stealing.
9. A. F— .	28.vi.49	14 "	Stealing.
10. J. D— .	26.xi.48	13 "	Stealing, truancy.
11. R. McD— .	25.ii.49	11 "	Beyond parental control.
12. T. F— .	28.vi.49	12 "	Stealing.
13. W. McG— .	25.vii.49	12 "	Malicious mischief.
14. A. M— .	5.iv.49	10 "	Housebreaking with malicious mischief and fire raising.
15. J. C— .	10.i.49	10 "	Stealing.

Control Boys.

Patient.	Admitted.	Age, Jan., 1950.	Previous history (before admission).
16. W. C—	3.iii.47	12 years	Theft and malicious mischief. Truancy.
17. W. B—	19.vii.48	12 "	Beyond home control. Malicious mischief.
18. W. C—	28.xi.49	15 "	Beyond home control. Stealing, truancy.
19. D. F—	14.x.48	13 "	Neglected. Illegitimate.
20. R. C—	19.ix.47	11 "	Orphan.
21. J. McD—	20.viii.47	13 "	Neglected. Beyond home control.
22. D. S—	9.xi.49	13 "	Theft and malicious mischief.
23. W. A—	29.xii.48	15 "	Theft, truancy.
24. H. S—	17.vi.49	10 "	Eight convictions for burglary.
25. J. McI—	24.xii.48	14 "	Truancy.
26. A. W—	14.xii.49	13 "	Truancy. Beyond home control.
27. J. H—	15.xii.49	13 "	Theft, truancy.
28. D. H—	28.xi.49	13 "	Choreiform movements.
29. W. W—	21.xi.49	12 "	Orphan.
30. W. O'R—	10.i.50	10 "	Theft.

Boys on Glutamic Acid Treatment.

Patient.	Before treatment I.Q., Cattell IA.	After 10 months' treatment I.Q., Cattell IB.	Before treatment P.A. Passalong Test.	After 10 months' treatment Passalong Test.
1. R. S—	58	67 (+ 9)	61	89 (+ 28)
2. W. E—	63	64 (+ 1)	86	86 (same)
3. A. C—	56	64 (+ 8)	65	65 (,,)
4. J. G—	67	78 (+ 11)	75	82 (+ 7)
5. J. D—	62	67 (+ 5)	72	74 (+ 2)
6. R. B—	63	65 (+ 3)	73	76 (+ 3)
7. A. M—	71	80 (+ 9)	70	70 (same)
8. D. T—	62	65 (+ 3)	74	83 (+ 9)
9. E. F—	75	75 (same)	80	80 (same)
10. A. F—	48	48 (,,)	79	90 (+ 11)
11. R. McD—	76	76 (,,)	65	80 (+ 15)
12. T. F—	54	54 (,,)	88	90 (+ 2)
13. W. McG—	63	65 (+ 2)	78	78 (same)
14. A. M—	58	58 (same)	99	107 (+ 8)
15. J. C—	55	54 (- 1)	78	81 (+ 3)

Control Boys.

Patient.	I.Q., Cattell IA.	I.Q., Cattell IB.	Passalong before.	After 10 months.
16. W. C—	78	77 (- 1)	89	99 (+ 10)
17. W. B—	61	60 (- 1)	86	86 (same)
18. W. C—	69	68 (- 1)	81	87 (+ 6)
19. D. F—	50	51 (+ 1)	45	55 (+ 10)
20. R. C—	60	60 (Same)	70	88 (+ 18)
21. J. McD—	47	47 (,,)	72	73 (+ 1)
22. D. S—	61	61 (,,)	66	70 (+ 4)
23. W. A—	57	57 (,,)	61	70 (+ 9)
24. R. M—	59	58 (- 1)	60	63 (+ 3)
25. J. McI—	61	61 (Same)	60	71 (+ 11)
26. A. W—	85	87 (+ 2)	106	109 (+ 3)
27. J. H—	69	72 (+ 3)	103	107 (+ 4)
28. D. H—	65	65 (Same)	90	91 (+ 1)
29. W. W—	64	66 (+ 2)	91	91 (Same)
30. W. O'R—	75	73 (- 2)	67	65 (- 1)

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Boys on Glutamic Acid Treatment.

Patient.	Behaviour change.
1. R. S— .	. Was very timid before treatment. Is more alert and self-confident ; can hold his own better.
2. W. E— .	. Behaviour much improved, more social ; can dress without supervision and does little jobs in the ward.
3. A. C— .	. More alert and self-confident. Good and willing worker in the ward. Best boxer in the ward. In football team.
4. J. G— .	. More alert and self confident. Can hold his own now. Keen to learn.
5. R. B— .	. No improvement in behaviour ; still overactive and lacks concentration.
6. A. M— .	. Behaviour improved. More alert, tidier ; shows more interest in his work and at school, still wanders.
7. D. T— .	. Behaviour always was good since he was admitted to Lennox Castle Institution. Developed a sense of humour.
8. E. F— .	. Still lacks energy, is not interested in any work or games.
9. A. F— .	. No change in behaviour.
10. J. D— .	. Ditto.
11. R. McD— .	. „
12. T. F— .	. „
13. W. McG— .	. Behaviour much improved ; more alert and interested in his work. Works in the garden of his villa.
14. A. M— .	. Improved ; more alert and shows more interest.
15. J. C— .	. Behaviour improving ; developed a sense of rhythm in the percussion band. Very good at marching.

Patients who showed Improvement after Glutamic Acid Treatment.

Patient.	I.Q.	P.A.	Behaviour.	Before treatment.	
				Age.	In Lennox Castle Institution.
1. R. S— .	. + .	. + .	. + .	. 15 .	. 4 months.
2. W. E— .	. - .	. - .	. + .	. 11 .	. 1 year 4 months.
3. A. C— .	. + .	. - .	. + .	. 15 .	. 1 year.
4. J. G— .	. + .	. + .	. + .	. 10 .	. 1 year 1 month.
7. A. M— .	. + .	. - .	. + .	. 12 .	. 1 year 2 months.
13. W. McG— .	. - .	. - .	. + .	. 12 .	. 6 months.
14. A. M— .	. - .	. + .	. + .	. 10 .	. 4 months.
15. J. C— .	. - .	. - .	. + .	. 10 .	. 1 year.

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