

Fusional Reserves and Psychological Variables in Monozygotic Twins

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Gedda and Bérard-Magistretti (1958) noted that in MZ twin pairs the twin who had a higher fusional convergence score (i. e. who was able longer to hold in focus with both eyes the two parts of an image when these were gradually separated) tended to be the leader of the pair. This was the case in no fewer than 42 out of 50 pairs who differed in both leadership and fusional convergence. Gedda's subjects were nearly all children, many of them under nine years of age. He regards fusional convergence as a psychosomatic function and considers his findings as representing the higher level of "will" of the leader twin. He thinks that a test of fusional convergence might be a biological means of identifying the leader twin.

An opportunity to repeat Gedda's experiment on a small group of normal adult MZ twins arose when a number of subjects who had taken part in a psychological investigation¹ in the Genetics Unit, Institute of Psychiatry, Maudsley Hospital (Director, Dr. Eliot Slater) later took part in an ophthalmological genetic investigation at the Courage Laboratory of Ophthalmology, Royal Eye Hospital (Director, Professor Arnold Sorsby). Among other tests, Mr. Michael Sheridan and Mr. George Leary carried out tests of fusional reserves, scores for fusional convergence being obtained on both twins in 14 MZ pairs brought up together who had also taken part in the psychological investigation. Their ages at the time of the later investigation ranged from 32 to 61 years. Six were male pairs, eight female. Zygosity was determined by the similarity method, and, in all 14 pairs, included blood grouping by Dr. R. R. Race and Dr. Ruth Sanger on eight blood groups, ABO, MN.S, P, Rhesus, Lutheran, Kell, Lewis and Duffy.

As part of the psychological investigation the twins had independently completed a questionnaire which included the questions: "As children did one of you usually take the lead? If so, who would you say was the leader?" Answers were further elaborated on interview. A difference in leadership was regarded as established when both twins agreed in their answers. Scores were also available for degree of extraversion-introversion and degree of neuroticism (emotional instability), obtained from a questionnaire devised by Professor H. J. Eysenck; and for intelligence, assessed

¹ SHIELD, J.: Monozygotic Twins Brought Up Apart and Brought Up Together. To be published.

by means of both verbal and non-verbal tests. A rating was made from the life histories of the twins as to which was thought to have had the poorer mental health. Intra-pair differences in fusional reserves (FR), calculated from the positive „break” point, were compared with differences in the above psychological variables, and also with differences in height and weight.

Results

Childhood Leadership. The reported childhood leader had the higher FR in four pairs, the lower FR in four pairs, the remaining eight pairs not differing with any degree of certainty in childhood leadership. It appears, therefore, that the interesting association between fusional convergence and leadership which Gedda observed in children either does not hold in adult twins or does not hold sufficiently for it to show up in a small sample.

Neuroticism. Eysenck, Granger and Brengelmann (1957), following a suggestion of Doggart (1944) that dynamic vergence power might be depleted in neurotics, apparently reflecting lowered muscle tone, found that neurotics had lower fusional reserves than normals. In the present small group of twins, however, there was no tendency for the twin who had the higher neuroticism score to have the lower FR. In six pairs the more neurotic had higher FR, in six pairs the lower, the remaining two pairs having the same neuroticism score. Nor was there any relation between FR and the author's Mental Health Ratings on the twins.

Extraversion. There was a tendency for the twin with the higher FR to be the less extraverted, i. e. the more introverted of the pair, in the ratio 10 : 3, one pair not differing in extraversion. This might possibly be regarded as reflecting the lesser distractibility of the introvert (Payne, 1960).

The Volunteer. The present group of twins was obtained as the result of an appeal on television, asking for twins to send in their names in the interests of research. In ten pairs it was the twin with the higher FR who sent in their names, in only two pairs the twin with the lower FR. (In the remaining two pairs both twins sent in their names.) This observation is perhaps consistent with the view of Gedda, according to which differences in FR are related to level of "will".

Intelligence. The twin with the higher FR tended to be the more intelligent, in the ratio 10 : 4. Though statistical significance has not been reached, one could speculate that this might reflect the habitual powers of concentration of the twins.

Physical variables. The twin with the higher FR tended to be the taller (8 : 2, four pairs not differing in height), and the lighter (9 : 5). It was the first born twin who tended to have the higher FR (ratio 10 : 3, birth order not known in one pair); this was particularly marked in the females (7 : 0). One can only record these observations without offering any explanation.

Summary and Conclusions

Following a suggestion of Gedda and Bérard-Magistretti, intra-pair differences between MZ twins in fusional reserves were compared with differences in psychological variables. While the strong relationship between twin leadership and FR which these workers found in twin children was not confirmed in the present small sample of 14 adult pairs, the twin with the higher FR tended to be the more introverted, the more intelligent and the one who volunteered for the investigation. He also tended to be the taller and the first born.

Further studies, including the temporal reliability of scores of fusional convergence, are required before the value of this characteristic as a psychological criterion can be established.

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RIASSUNTO

Seguendo un suggerimento di Gedda e Bérard-Magistretti, sono state confrontate le differenze intra-coppia in riserve fusionali tra gemelli MZ con alcune differenze in variabili psicologiche. Nel nostro modesto campione di 14 coppie adulte, non si è potuta confermare la notevole correlazione trovata da questi autori in gemelli in età infantile tra Gemello Guida e Convergenza Fusionale; tuttavia il gemello

con la più alta CF tendeva ad essere il più introverso, il più intelligente e quello che si era offerto volontario per l'indagine. Egli era pure il più alto dei due e il primo-nato.

Ulteriori studi, anche sulla validità temporale dei punteggi di CF, appaiono necessari prima di poter stabilire il valore di questa caratteristica come criterio psicologico.

RÉSUMÉ

L'auteur, à la suite d'une suggestion de Gedda et Bérard-Magistretti, a comparé les différences entre jumeaux MZ des valeurs de Convergence Fusionnelle avec les différences de variables psychologiques chez ces mêmes jumeaux. Au cours d'une étude de 14 couples de jumeaux adultes, l'auteur n'a pas pu confirmer la forte association entre une valeur supérieure de CF et la qualité de « leader » d'un couple de jumeaux que Gedda et Bérard-Magistretti ont rapporté chez des jumeaux enfants. Cependant l'auteur a constaté que le jumeau qui avait une valeur supérieure de CF tendait à être le plus introverti et le plus intelligent; c'était aussi celui qui s'était offert le premier comme sujet de recherches. Enfin il était aussi le plus souvent le premier-né et le plus grand.

Il est nécessaire de faire d'autres recherches, en particulier sur la consistance temporelle des valeurs de CF, avant d'établir ce facteur biologique comme critère de discrimination psychologique entre jumeaux MZ.

ZUSAMMENFASSUNG

Infolge einer Andeutung von Gedda und Bérard-Magistretti hat der Verf. den Unterschied innerhalb der EZ-Zwillingspaare in Fusionskonvergenz mit dem Unterschied in einigen psychologischen Merkmalen verglichen. Zwar fand die markierte Korrelation, die diese Autoren zwischen « Führerzwilling » und FK-Werte bei Zwillingen jugendlichen Alters zeigten, bei der jetzigen kleinen Stichprobe von 14 erwachsenen Zwillingspaare keine Bestätigung, jedoch war im allgemeinen der Zwilling, der die höhere FK-Werte hatte, der intelligentere, der introvertiertere und derjenige, der sich zur Verfügung der Untersuchung zuerst gestellt hatte. Er war auch gewöhnlich der grössere und der erstgeborene.

Weitere Untersuchungen, u.a. über die zeitliche Zuverlässigkeit der FK-Werte, sind notwendig, ehe die Anwendbarkeit dieses Charakters als psychologisches Unterscheidungskriterium sich auswerten lässt.