

INTRAPAIR DIFFERENCE IN PERSONALITY TRAITS, AND EMOTIONAL AND SOCIAL ADJUSTMENT IN MONOZYGOTIC TWINS

SVENN TORGERSEN

Institute of Psychiatry, University of Oslo, Vinderen, Norway

During the last decade, there has been a growing interest in the advantages that MZ twin pairs offer for studying the effect of environmental factors on the development of emotional disturbances. Much of this research has been aimed at investigating the relationship between childhood differences and later discordance with regard to schizophrenia in MZ twin pairs. A few studies have used similar methodology to investigate the development of neurotic reactions. There has been very little work dealing with the causes of discordance in the normal personality development of MZ twin pairs. The paper presents some of the results from a larger twin project which show the relationship between childhood differences and differences in adulthood. The study examined differences in oral, obsessive, and hysterical personality traits, as well as differences in phobic fears, general neurotic symptomatology, occupational and marriage adjustment in 50 relatively unselected MZ twin pairs. The results show that many of the same childhood differences which have been reported to be associated with the discordance found in regard to schizophrenia and neuroses, are also related to differences in personality structure, emotional and social adjustment in less disturbed MZ twin pairs. Other childhood differences, however, seem to be more specifically related either to neurotic or to normal personality development, pointing to the importance of studying the relationship between specific intrapair differences in childhood and differences in various areas of later personality development.

The main current of twin research has been aimed at investigating the contribution of hereditary factors in the determination of different characteristics. Ever since Galton's pioneer studies of twins, however, there has been considerable interest in the twin relationship itself, perhaps the most well known classical work in this tradition being the publications by von Bracken (1936) and Burlingham (1952). In these studies, the causes and consequences of the dominance-submissiveness constellation in MZ twin pairs in childhood have particularly attracted the attention of the authors.

The description of the early differentiation processes in MZ twin pairs has led to an interest in using twin pairs for disclosing also environmental factors in the development of emotional disturbances. Particularly in the schizophrenia twin research many results have been published about the relationship between childhood differences and discordance with regard to schizophrenia. These have been summarized by Stabenau (1973). Much less work has been done concerning the development of neurotic reactions in this twin research tradition. Tienari (1963, 1966), however, has carried out an extensive study of the relationship between childhood differences and differences in neurotic development within MZ twin pairs.

Acta Genet. Med. Gemellol. (1977), 26: 55-61

In this paper some results will be presented from a larger twin project which show how childhood differences within MZ twin pairs are related to a broad spectrum of adult differences in personality traits, and emotional and social adjustment.

MATERIAL AND METHODS

The sample consisted of 50 MZ, 22 female and 28 male, twin pairs. Five of the pairs were specially selected because at least one of the twins in each of these pairs has been treated for neurotic problems. The remaining pairs constituted a relatively unselected sample of twins from the Eastern and Western part of Norway.

The age ranged from 20 to 70 years, with a mean of 41 years in both groups of twins.

The zygosity was determined by analyzing 10 blood and serum systems; consequently, the probability of misclassifying the twin pairs with regard to the zygosity is negligible.

The twins were interviewed separately. The interviewer tried to obtain information with regard to: differences in childhood, which one was born first, heaviest and tallest at birth, strongest physically in childhood, the dominant one in the twinship, most reserved, most quick-tempered, most quiet, most anxious, etc. They were also asked about emotional problems and neurotic difficulties, and their emotional and social adult adjustment was evaluated. To get a more objective measure of emotional functioning, the twins were also asked to fill out a questionnaire covering common fears and phobias, clustering into separation, nature, mutilation, social and animal fears, as displayed through factor analysis with Varimax rotation.

A personality questionnaire was given to the twins after the interview, with the instruction to complete it at home, but not to discuss the replies with anybody. The personality questionnaire covered 23 traits, each trait measured by means of 7 items, to which the twins replied "yes" or "no", according to whether the items fitted in with their common behavior and attitudes. Twenty of the traits were taken from the questionnaire constructed by Lazare et al. (1966), aimed at measuring oral, obsessive and hysterical personality traits. The items were partly modified to fit in with Norwegian words and phrases. The items of three of the traits were constructed by the investigator, namely, lack of self-esteem, introversion and eridophobia (fear of aggression, sickness, disaster, according to the description of Jacobson [1965]).

RESULTS

The Table shows the relationship between childhood differences and differences in adult personality, and emotional and social adjustment. Weight at birth, somatic health, physical strength, as well as obedience, obstinacy and dauntlessness in childhood were not significantly related to differences in adulthood, and are, consequently, omitted from the table. The same is true concerning the personality traits passivity, eridophobia, introversion, fear of sexuality, obstinacy, rejection of others, orderliness and perseverance. The phobic trait mutilation fear was also unrelated to differences in childhood. Only the statistically significant relationships are reported in the table, and the significances are tested by means of the binominal formula.

We find that a number of differences in childhood are related to adult differences in many of the personality traits as well as emotional and social adjustment. However, all childhood differences are not related to the same kind of differences in adult age. Physical differences, birth order, and length at birth are almost exclusively related to differences in phobic traits, the first born and the tallest at birth being the lowest scorer on phobic fears. We also find that dependence in childhood, passivity, anxiousness, and sensitivity are related to differences in emotional and social adjustment in childhood, but almost unrelated to differences in

personality traits. On the other hand, to be most or least quiet, quick-tempered, thrifty, cleanly, and orderly, seem to be of no importance for differences in emotional and social adjustment in adulthood, but is related, however, to differences in adult personality traits. The most quiet in childhood is the lowest scorer on oral aggression, exhibitionism, and emotionality, and the highest scorer on emotional constriction. The most quick-tempered is the highest scorer on oral aggression and sexual provocativeness. The most thrifty in childhood is the highest scorer on emotional constriction, parsimony and severe superego, pointing to the importance of early differentiating in obsessive personality development. Neurotic symptoms in childhood, the dominance-submissiveness constellation and reserve, seem to have a broader influence upon the adult personality. The twin with most neurotic symptoms in childhood is also most neurotic in adulthood, and the lowest scorer on oral aggression and exhibitionism. The dominating twin in the twinship is least hampered with neurotic symptoms in adulthood, and the highest scorer on aggression and exhibitionism. Finally, the most reserved in the twin pair in childhood is the highest scorer on all the phobic traits, dependence, lack of self-esteem, self-doubt, and rigidity, and the lowest scorer on oral aggression and aggression. Modesty in children seems to be the starting point for a general neurotic personality development, characterized by anxiety, insecurity, rigidity, and aggression inhibition.

DISCUSSION

The obtained relationships between differences in childhood, and adult differences in personality, emotional and social adjustment in MZ twin pairs, point to the importance of early environmental factors in the normal and neurotic personality development.

Let us see how the results fit in with other research about the relationship between childhood differences and adult differences in personality functioning in MZ twins.

Stabenau (1973), summarizing studies of MZ twin pairs' discordance as related to schizophrenia, found that the one who was most submissive, neurotic, sensitive, and obedient as a child, was most likely to be the one to develop schizophrenia. To be most dependent, quiet-shy, and stubborn, was of lesser importance, and non-traumatic physical differences at birth or in childhood did not have any predictive value.

Other investigators who have studied neurotic MZ twin pairs have also found that the most submissive one in childhood was likely to be the most severely mentally ill (Slater 1953), and most neurotic (Dencker 1958, Tienari 1963). In his extensive study of unselected twin pairs, Tienari (1966) found that the submissive one not only was more neurotic, more constricted (according to psychological tests), but also less energetic, the lower scorer on tests of calmness and placidity.

Finally, in a study of the relationship between systolic blood pressure and childhood personality differences in MZ twin pairs, it was found (Torgersen and Kringlen 1970) that the most reserved as a child, the submissive one, the most insecure, the most quiet, anxious and obedient, had the higher measured blood pressure when examined.

It seems, from a comparison of studies of normal and highly disturbed MZ twin pairs, that there is great consistence of results. The same childhood differences which seem to be related to differences in schizophrenia, are also related to differences in neuroses and normal personality development. Studies of the dominance-submissiveness constellation seem especially to show this phenomenon. The same is somewhat true regarding differences in

Table. The relationship between childhood and adult intrapair differences in MZ twin pairs

Adult differences	Childhood difference														
	First born	Tallest at birth	Most dependent	Most active	Most anxious	Most sensitive	Most quiet	Most quick-temp.	Most thrifty	Most cleanly	Most orderly	Most selfconfid.	Most neurotic symp.	Dominant	Most reserved
<i>Phobic traits</i>															
Animal fears	H	13	5	18								10			26
	L	33***	18**	3***								23*			11*
Separation fears	H	15		17											27
	L	31*		4***											10***
Nature fears	H		6												26
	L		18*												12*
Social fears	H		6												27
	L		18*												11*
<i>Emotional and social adjustment</i>															
General neurotic symptoms	H				6	26	17						27	26	
	L				23***	9***	6*						7****	11*	
Marriage maladjustm.	H						11								
	L						2*								
Occupational maladjustm.	H														
	L						2*								
<i>Oral personality traits</i>															
Suggestibility	H		5												
	L		16*												
Self-doubt	H														25
	L														10**
Dependence	H				6										20
	L				19**										7**

neurotic symptomatology in childhood. On the other hand, to be most reserved in childhood seems to be strongly related to a number of personality differences, differences in phobic reactions and also differences in systolic blood pressure reactivity in a normal twin sample, but unrelated to differences in general neurotic symptoms, marriage and occupational adjustment, and only weakly related to discordance in schizophrenic development.

My results seem in addition to show that to be the more quiet, the less quick-tempered as a child, the more thrifty, cleanly and orderly of the twins in MZ twin pairs, is related to adult differences in personality, but does not seem to have the same influence upon the development of adjustment problems in adulthood. The opposite is true for being more sensitive, dependent, anxious and passive. Furthermore, for some reason, to be the second born and the shortest at birth leads to more phobic fears in adulthood, but had little or no influence upon other adult intrapair differences studied.

Further study will be necessary to establish the impact of specific childhood differences in MZ twin pairs upon specific differences in adult personality and adjustment.

Acknowledgments

The twins born before 1936 were obtained through the National Twin Register, Institute of Psychiatry, University of Oslo. Professor Einar Kringlen, who has brought about the Register has given me valuable help and advice, for which I am very grateful. The twins born later were ascertained by the Norwegian Register for Inherited Disorders, Institute of Medical Genetics, University of Oslo. The twins belonged to a sample previously investigated at the Institute. I gratefully acknowledge the assistance provided by the staff of the Institute of Medical Genetics.

The work was supported by grants from the Norwegian Research Council for Science and the Humanities.

REFERENCES

- Bracken H.v. 1936. Ueber die Sonderart der Subjectiven Welt von Zwillingen. *Arch. Ges. Psychol.*, 97: 97-105.
- Burlingham D. 1952. *Twins, a Study of Three Pairs of Identical Twins*. London: Imago Publishing Co.
- Dencker S. J. 1958. A follow-up study of 128 closed head injuries using co-twins as controls. *Acta Psychiat. Scand.* 33 (Suppl.), 123.
- Jacobson E. 1965. *Psykoneuroser (I)*. Copenhagen: Munksgaard.
- Lazare A., Klerman G.L., Armor D.J. 1966. Oral, obsessive and hysterical personality patterns. *Arch. Gen. Psychiatry*, 14: 624-630.
- Slater E. 1953. Psychotic and neurotic illnesses in twins. London: Spec. Rep. Ser. Med. Res. Coun. 278.
- Stabenau J.R. 1973. Schizophrenia: a family's projective identification. *Am. J. Psychiatry*, 130: 19-23.
- Tienari P. 1963. Psychiatric illnesses in identical twins. *Acta Psychiat. Scand.* 39 (Suppl.), 171.
- Tienari P. 1966. On intrapair differences in male twins. *Acta Psychiat. Scand.* 42 (Suppl.), 188.
- Torgersen S., Kringlen E. 1970. Blood pressure and personality differences in MZ twins. *Acta Genet. Med. Gemellol. (Roma)*, 19: 269-272.

RIASSUNTO

Differenze Intracoppia nei Caratteri della Personalità e nella Sfera Emozionale e Sociale in Gemelli Monozigotici

Nel corso degli ultimi dieci anni vi è stato un crescente interesse nei vantaggi che le coppie gemellari MZ offrono per lo studio dell'effetto dei fattori ambientali sullo sviluppo di disturbi emozionali. Buona parte di queste ricerche si è rivolta allo studio dei rapporti fra le differenze nell'infanzia e la successiva discordanza per la schizofrenia in coppie MZ. Alcuni studi hanno adottato una simile metodologia per studiare lo sviluppo di reazioni neurotiche. Vi sono pochissimi lavori che hanno trattato le cause della discordanza nel normale sviluppo della personalità in gemelli MZ. Questo lavoro presenta alcuni risultati di un ampio progetto

gemellare che indicano il rapporto fra differenze nell'infanzia e differenze da adulti. Sono state esaminate caratteristiche della personalità orale, ossessiva ed isterica, come pure differenze nei timori fobici, nella sintomatologia neurotica generale, nella situazione professionale e matrimoniale, in 50 coppie MZ relativamente non selezionate. I risultati indicano che molte delle differenze considerate associate alla discordanza trovata rispetto a schizofrenia e neurosi sono anche collegate a differenze nella struttura della personalità e nella situazione emozionale e sociale nelle coppie di gemelli MZ meno disturbate. Tuttavia, altre differenze dell'infanzia sono apparse essere più specificamente collegate ad uno sviluppo della personalità sia normale che neurotica, indicando così l'importanza dello studio dei rapporti fra differenze specifiche intracoppia nell'infanzia e differenze in varie aree del successivo sviluppo della personalità.

RÉSUMÉ

Différences dans les Caractères de la Personnalité et dans la Sphère Emotionnelle et Sociale entre Jumeaux Monozygotiques

Au cours des dix dernières années il y a eu toujours plus d'intérêt dans les avantages que les couples de jumeaux MZ présentent dans l'étude de l'effet des facteurs ambiants sur le développement des troubles émotionnels. Plusieurs de ces recherches concernaient l'étude des rapports entre différences dans l'enfance et successive discordanza pour la schizophrénie dans les couples MZ. Quelques études ont adopté une méthodologie semblable dans l'étude des réactions neurotiques. Très peu d'études se sont occupées des causes de la discordanza dans les jumeaux MZ vis-à-vis de la personnalité normale. Cette recherche présente quelques résultats d'un projet gémellaire qui indiquent le rapport entre différences dans l'enfance et différences dans la vie adulte. Des caractéristiques de la personnalité orale, obsessionnelle et hystérique ont été examinées, ainsi que des différences pour les craintes phobiques, la symptomatologie neurotique générale, la situation professionnelle, le mariage, chez 50 couples de jumeaux MZ relativement non sélectionnés. Les résultats indiquent que beaucoup des différences considérées associées à la discordanza trouvée pour la schizophrénie et la neurose sont aussi bien associées à des différences dans la structure de la personnalité et dans la situation émotionnelle et sociale chez les couples MZ moins troublés. Par ailleurs, quelques différences dans l'enfance semblaient être plus spécifiquement associées à un développement de la personnalité, soit normale soit neurotique, indiquant ainsi l'importance de l'étude des rapports entre les différences spécifiques entre jumeaux au cours de l'enfance et les différences dans les divers aspects du développement successif de la personnalité.

ZUSAMMENFASSUNG

Unterschiede in der Persönlichkeit sowie in der sozialen und der Gefühlssphäre zwischen EZ-Paarlingen

Im Laufe der letzten zehn Jahre beobachtet man ein steigendes Interesse für die Vorteile, welche EZ zur Erforschung der Wirkung von Umweltfaktoren auf das Zustandekommen von Gefühlsstörungen bieten. Ein großer Teil dieser Forschungen befaßt sich mit dem Zusammenhang zwischen den in der Kindheit beobachteten Unterschieden der Paarlinge und der späteren Diskordanz für Schizophrenie. Einige Untersuchungen wählten eine ähnliche Methodik zum Studium der Entwicklung der neurotischen Reaktionen. Nur ganz wenige Arbeiten beschäftigten sich mit den Ursachen der Diskordanz in der normalen Entwicklung der Persönlichkeit bei EZ. In der vorliegenden Arbeit finden sich Ergebnisse eines großzügigen Zwillingsprojektes, aus denen der Zusammenhang in den Unterschieden im Kindheits- und im Erwachsenenalter hervorgeht. Die Untersuchung erfolgte mit 50 auslesefreien EZ-Paaren; untersucht wurden die Merkmale von oraler, Zwangs- oder hysterischer Persönlichkeit, die Unterschiede in den phobischen Ängsten, in der allgemein neurotischen Symptomatik sowie in der Berufs- und Ehesituation. Die Ergebnisse zeigen, daß viele der Unterschiede, die man als mit der Diskordanz für Schizophrenie bzw. Neurose verbunden ansieht, bei den weniger gestörten EZ-Paaren auch mit Differenzen in der Persönlichkeitsstruktur und in der sozialen sowie emotiven Sphäre einhergehen. Andere Unterschiede in der Kindheit scheinen jedoch spezifischer entweder an eine normale oder an eine neurotische Entwicklung der Persönlichkeit gebunden zu sein, woraus sich die Wichtigkeit ergibt, die Zusammenhänge zwischen den spezifischen Differenzen der Kindheit und denen auf verschiedenen Gebieten der späteren Entwicklung der Persönlichkeit bei den Paarlingen genauer zu erforschen.

Dr. Sverre Torgersen, Institute of Psychiatry, University of Oslo, Vinderen, Box 230, Oslo 3, Norway.