

A TWIN STUDY OF GRAPHOLOGY

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Summary. The object of the study was to make an objective assessment of the validity of ascertaining personality from handwriting. The subjects chosen for the research were twenty-four pairs of identical and twenty-four pairs of non-identical twins. Personality scores were obtained from each subject, and each pair of twins was rated by their parent(s) on a questionnaire comparing their personality and development. These ratings were compared with ratings of within-pair personality differences based on the examination of samples of handwriting by a consultant graphologist and by a team of eight amateurs. The results showed that handwriting is not likely to be helpful in the study of neuroticism and is of no value in the determination of zygosity. In the case of extraversion, however, the correlations were low but in the expected direction and with reasonably good internal consistency.

Introduction

Graphology, the science of ascertaining the personality of an individual by examining and analysing his handwriting, has a history reaching as far back as the time of Julius Caesar. In his review of the history of graphology Jacobi (1939) states that Caesar's handwriting peculiarities were observed by C. Teutonium Tranquilus. The eleventh-century Chinese also associated handwriting and personality but in Europe it was not until the seventeenth century that such a significant relationship was observed. In 1622 Camillo Baldi, a doctor and professor of Bologna University, published *The Means of Knowing the Habits and Qualities of a Writer from his Letters*. This was a first step towards the science of graphology in Europe. It was followed by numerous insightful comments on the psychology of handwriting by famous authors, artists and scholars, including Leibnitz, Gainsborough, Walter Scott, Goethe, Bleuler, Jung, Einstein and Stefan Zweig, the last of whom, in a lecture at the *Sunday Times* Book Exhibition in London, said '...Handwriting betrays a man, whether he wants it or not, it is as

unique as his personality and sometimes reveals what he conceals...' (Morley, 1967).

In 1871 an important advance in this sphere was made when the French Abbé Jean Hippolyte Michen coined the term 'graphology' and published the first attempts to study handwriting scientifically in his books *The Mysteries of Handwriting* and *A System of Graphology*. However, his theories were not entirely sound and scientific, and it was his pupil and successor, Jules Crepieux-Jamin, who elaborated Michen's method and is considered to be the head of the French school of graphology.

The investigation of the psychology of handwriting began to be thought of as a science at the turn of the last century, and investigators such as Preyer, Meyer and Klages were highly influential in creating respect and recognition for it. This did not extend to Great Britain, however, until several Continental graphologists were forced to flee from the Nazis and settled in Britain (Jacobi, 1939; Saudek, 1954).

There is still far less publicity given to graphology in Great Britain than on the Continent and in the United States, but it is slowly gaining more recognition here and attempts are being made to use it to contribute to the study of such problems as migraine, homosexuality and crime (Holt, 1965). Another potential use is in the study of the pre-morbid personality of patients with psychiatric disorders; handwriting specimens are usually available from before the onset of the illness, and assessments based on them are not liable to the retrospective falsification which may bias other ratings of personality; they were used, for instance, in the study of the 'Genain quadruplets', a set of identical quadruplets concordant for schizophrenia (Rosenthal, 1963).

Like any test or measure, handwriting analysis requires evidence of reliability and validity (Lockowandt, 1968). It is the objective demonstration of validity which is particularly important, and which hitherto has been lacking. The object of the present work is to look for validity in the sense of agreement with other methods of assessing personality. The subjects chosen for the study are a population of twins, selected from a larger population of twins who have volunteered to take part in research at the Institute of Psychiatry. Twins were chosen as subjects, not because we wished to study the inheritance of handwriting, but because of the following advantages which they offer for this type of research:

(1) They provide pairs who are matched for age, sex and social class, and for many variables associated with family background. In particular, they are matched for schooling and all the subjects learned to write in the same class at school. Since most of the comparisons to be made are within-pair comparisons, differences in handwriting which might be associated with differences in personality may be seen separated from differences induced by variations in home or school training.

(2) It is possible to obtain comparative ratings of personality for twins, who have been brought up in the same home over many years, and whose parents have

had ample opportunity to compare their behaviour. Parental ratings of personality differences have proved to be very reliable even in the case of pairs of siblings differing in age (Price, 1969) and therefore it is reasonable to expect ratings for twins to be still more reliable. These parental ratings may therefore be used, in the case of twins, to supplement personality scores obtained from questionnaires.

Method

Assessments of intrapair differences in personality were obtained from the parents of the twins, and by subtracting the personality inventory scores of the younger twin from those of the elder (using Eysenck's Personality Inventory, Form 3). These were compared with ratings of within-pair personality differences, based on the examination of samples of handwriting by a consultant graphologist and by a team of eight amateurs (all 'mental health professionals') with particular interest in graphology.

The subjects

Forty-eight pairs of female twins were chosen from among the hundreds of twins who agreed to be enrolled on the Twin Register which is currently being set up at the Institute of Psychiatry, London. Twins of all ages and from all over the British Isles replied to appeals made via television, radio, and local and national newspapers. The subjects of the experiment were invited, by letter or telephone, to visit the Institute (one pair at a time) in order to take part in various tests, including the handwriting. Their ages ranged between 17 and 32 years, and they were chosen on the basis of their geographical accessibility to the Institute. Half of the pairs were monozygotic, half dizygotic and, as far as possible, the two groups were matched for age and marital status.

Procedure

Before the interview itself the twins were sent a printed copy of an extract from Keats' letters which they were instructed to copy out in their normal handwriting using fountain pen and paper of their own choice. The passage was chosen by the consultant graphologist because it contained many emotive words. The twins were requested to bring this and a pen to the Institute. During the course of the interview each twin, individually, was given a sheet of plain white paper and a pen (if she had not brought one with her) and asked to write approximately one hundred words on 'How I feel about being a twin'. She was then left alone until she had completed the task.

The graphologist suggested the use of two such passages in order to provide, by the former, a standardized test situation and, by the latter, an opportunity to be spontaneous and reveal emotion to some extent.

Raters and rating

Personality. Each twin participating in this experiment had already completed, independently, the eighty-item Eysenck Personality Inventory (Form 3), which gives self-ratings on psychoticism, extraversion and neuroticism. The twins had also been rated by their parent(s), using the Comparison Questionnaire (Appendix A), on extraversion, rebelliousness, peer group sociability, family sociability, neuroticism and leadership. The twins' self-ratings were scored separately and then comparatively, by subtracting the score of the younger twin from that of the older and then adding 20 (to ensure a positive sum). The parental ratings (already in a comparison form) were derived by summing all the scores in each section, using a scoring sheet which accounted for the direction of the items. Thus, if the maximum score for the section was obtained, this indicated that the older twin was completely dominant in this characteristic; the younger twin was dominant if the minimum score was obtained.

Handwriting. When the first twenty pairs of twins had produced the copied and spontaneous handwriting, each pair was randomly numbered and each twin labelled A or B (the elder A, the younger B). The set of copied handwriting was then sent to the graphologist (if one or both twins were married their maiden name was given to avoid any bias in assessment) and copies were distributed to the eight amateurs. They were asked to compare each pair of twins on extraversion, neuroticism, verbal IQ, rebelliousness and leadership, using a 5-point scale (Appendix B).

The professional graphologist rated each twin individually on a 5-point scale for each of the characteristics being examined. After the ratings on the copied handwriting had been received, the second set of handwriting (spontaneous) was sent to the graphologist (but not given to the amateurs), and was analysed in the same manner as the first.

The sequence was repeated for the next twenty, and finally the last eight pairs of twins.

Determination of zygosity

The raters were asked to assess whether the twins were identical or fraternal. These ratings were compared with zygosity estimates based on physical examination and determination of ten blood groups.

Statistical analysis

The hypothesis being tested concerns the correlation of within-pair differences. Although the data are mainly ratings, and therefore essentially non-parametric, Pearson product-moment correlation coefficients have been used throughout. We feel that this is justified because the distributions of the ratings are symmetrical about the means (since there is no consistent difference between elder and younger

Table 1. Intercorrelation of handwriting ratings

Item	Professional × amateurs	Professional			Amateurs						
		IQ	E	N	R	L	IQ	E	N	R	L
Verbal IQ	0.11	1.0	0.02	-0.15	0.09	0.49†	1.0	-0.17	-0.26	-0.18	0.07
Extraversion	0.67‡	0.02	1.0	0.00	0.16	0.26	-0.17	1.0	-0.19	0.71‡	0.61‡
Neuroticism	0.20	-0.15	0.00	1.0	0.22	-0.31*	-0.26	-0.19	1.0	0.21	-0.09
Rebelliousness	0.24	0.09	0.16	0.22	1.0	0.35*	-0.18	0.71‡	0.21	0.10	0.54‡
Leadership	0.31*	0.49‡	0.26	-0.31*	0.35*	1.0	0.07	0.61‡	-0.09	0.54‡	0.10

* $P < 0.05$; † $P < 0.01$; ‡ $P < 0.001$.

Table 2. Intercorrelation of parents' ratings of personality and PI scores

Parents' rating	PI scores			Parents' ratings		
	E	N	L	I	FS	L
Impulsiveness	0.34*	0.02	0.53‡	1.0	-0.09	0.52‡
Family sociability	0.09	0.01	0.18	-0.09	1.0	-0.31*
Peer sociability	0.54‡	0.01	1.0	0.53‡	0.18	0.38†
Neuroticism	-0.22	0.27	-0.26	-0.21	-0.17	-0.13
Rebelliousness	0.17	-0.04	0.38†	0.72‡	-0.31*	1.0
Leadership	0.15	-0.30*	0.31*	0.52‡	-0.06	0.67‡

* $P < 0.05$; † $P < 0.01$; ‡ $P > 0.001$.

twins) and the shapes of the distributions do not deviate markedly from the normal.

Results

Internal consistency of the ratings (Appendix C)

Handwriting ratings. In the rating of extraversion, the professional agreed well with the amateurs ($r = 0.67, P < 0.001$). The other correlations between professional and amateur ratings were low, although all were positive (see Table 1). In Table 1 it may also be seen that the amateurs tended to rate extraversion, rebelliousness and leadership in a similar way, whereas this tendency was barely shown by the professional, whose ratings of leadership were associated with high verbal IQ, high rebelliousness and low neuroticism.

Personality ratings. In the rating of peer group sociability, the parents agreed fairly well with the twins' self-ratings of extraversion on the PI ($r = 0.54, P < 0.001$). The other parental ratings had only low correlations with the self-ratings, although most were in the expected direction (Table 2).

Parental ratings of impulsiveness, rebelliousness and leadership were strongly associated, and this cluster was also related to peer group sociability. Parental ratings of neuroticism and family sociability had low correlations with other variables, and there was only one barely significant correlation with the PI neuroticism scale (parental rating of leadership, $r = -0.30, P < 0.05$). As expected, there was a negligible correlation between E and N scores in the PI ($r = -0.12$).

Relation of handwriting ratings to personality ratings

The correlations of the test results and the parental ratings of personality with the handwriting ratings are shown in Table 3. The amateurs and the professional rated the copies of Keats' letter, and the professional also rated a 100-word essay on 'How I feel about being a twin'.

None of the correlations is significant. However, while the correlations relating to neuroticism are near to zero (contrary to the conclusion reached by de Wilde, 1970), the twelve correlations relating to extraversion are all in the expected direction with values between 0.06 and 0.23. If anything, the professional correlations are slightly higher than those of the mean of the eight amateurs; however, it is interesting to note that the professional correlations are higher for the copied letter than for the essay. The professional also made absolute ratings of extraversion on both the copied letter and the essay, and the respective correlations with absolute values of E were 0.12 and 0.10 respectively.

Objective handwriting measures

In an attempt to discover the features of the handwriting on which the raters were basing their estimates of extraversion, the pairs containing one or two left-handers were omitted and the remaining forty pairs of handwriting samples were

Table 3. Correlation of handwriting and personality ratings

Ratings	Handwriting rating	Nature of handwriting rating		
		Amateurs	Professional	
		Copy	Copy	Essay
Test results				
Mill Hill synonyms	Verbal IQ	-0.12	-0.10	-0.15
PI E scale	Extraversion	0.10	0.15	0.06
PI N scale	Neuroticism	-0.15	-0.02	-0.11
Parents' ratings				
Impulsiveness	Extraversion	0.10	0.14	0.12
Family sociability	Extraversion	0.16	0.15	0.11
Peer sociability	Extraversion	0.16	0.23	0.15
Neuroticism	Neuroticism	-0.02	0.05	-0.06
Rebelliousness	Rebelliousness	0.13	0.18	0.16
Leadership	Leadership	0.10	0.25	-0.05

All variables expressed as within-pair differences.

measured on the following items, using the text of the copied letter, and the spontaneous passage:

- (1) Number of words in the first five lines (spontaneous)
- (2) Height (in inches) of the first five lines (spontaneous)
- (3) Slope (degrees) of the fifth line (spontaneous)
- (4) Slope (degrees) of the first letter containing an upright stroke (copied)
- (5) Height (cm) of 'M' in 'My dear...' (copied)

These five variables were correlated with each other, with the ratings of extraversion based on handwriting, and with the ratings of extraversion from behaviour (E score and parents' comparison). Within-pair differences were used throughout.

Only two of the measures were important in influencing the handwriting ratings (Table 4). 'Slope of letters' gave correlations of 0.59 and 0.73 with amateur and

Table 4. Relation of handwriting ratings of extraversion to objective handwriting measures

Characteristic measured	Extraversion ratings	
	Amateur	Professional
Words, first line	-0.57	-0.50
Height, first five lines	0.23	0.29
Slope of line	-0.03	-0.22
Slope of letters	0.59	0.73
Height of letter	0.30	0.24

Table 5. Relation of personality traits to objective handwriting measures

Characteristic measured	Personality ratings	
	PI E score	Parents' E rating
Words, first line	0.06	-0.08
Height, first five lines	0.10	0.10
Slope of line	-0.09	0.19
Slope of letters	0.12	0.10
Height of letter	-0.11	-0.12

professional extraversion ratings respectively, and the corresponding correlations, for 'number of words in first line', were -0.57 and -0.50 . The two measures themselves have a correlation of -0.17 , and if this small correlation is ignored it is clear that 'number of words in first line' and 'slope of letters' account for three-quarters of the variation in extraversion rating for the professional, and only slightly less for the amateurs. The twin with sloping writing and few words to the line is rated as extraverted.

However, these measures are poor guides to extraversion as rated by the twins or their parents (Table 5).

The intercorrelation of the objective measures is given in Table 6.

Table 6. Intercorrelation of objective handwriting measures

Characteristic measured	Height, first five lines	Slope of line	Slope of letters	Height of letter
Words, first line	-0.01	0.04	-0.17	0.01
Height, first five lines	—	-0.01	0.19	0.29
Slope of line	—	—	-0.12	0.08
Slope of letters	—	—	—	0.36

Zygoty

Estimates of zygoty gave a correlation of 0.43 between professional and amateur ratings, but the correlations with zygoty as determined by blood groups were only 0.25 and 0.08 respectively. This supports the view first ventured by Galton in 1875 and later confirmed by Newman, Freeman & Holzinger (1937) that the handwriting of identical twins appeared to be no more alike than that of fraternal twins (Vandenberg, 1966).

Discussion

It is clear from the results that handwriting analysis is not likely to be helpful in the study of neuroticism, and is of no value in the determination of zygosity (Text-figs. 3 and 4). However, there is a suggestion that it might repay further study in the case of extraversion. Although the correlations were all low, they were all in the expected direction. Moreover, the internal consistency of the extraversion ratings was reasonably good: on handwriting, the professional agreed with the mean of the eight amateur ratings of extraversion ($r = 0.67$, $P < 0.001$); and the parents' ratings of their children's peer-group sociability agreed with twins' own extraversion scores on the PI ($r = 0.54$, $P < 0.001$) which is particularly good since the twins were making absolute rather than relative ratings.

It should be remembered that the graphologist had no previous experience in working with the concept of extraversion, nor had she had any training in the study of scripts from extraverted and introverted subjects. This would seem to be a promising way of continuing the research, and it could be supplemented by further objective study of the graphic correlates of extraversion.

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Appendix A

Daughters' Questionnaire II

The object of this questionnaire is to give a description of your twin daughters. In order to do this you compare their temperaments.

If, for any item, there is not much difference between the sisters, or if the difference has been now one way and now the other, please put a cross in the middle column. If the item applies to one of the twins a little more than to the other, put the mark under her name in the column headed 'to a small extent'; if the item applies considerably more to one twin than the other put your cross in the column headed 'to a large extent', under the appropriate twin's name. If you do not have enough information to make a judgment on any item, omit that item altogether.

Name:	First-born		No dif- ference	Second-born	
	To a large extent	To a small extent		To a small extent	To a large extent
<i>A. Physical development</i>					
1. Heavier at birth.....					
2. Walked first					
3. Talked first.....					
4. Quicker at learning to read.....					
5. Taller					
6. Slimmer					
7. More graceful					
8. Earlier onset of menstruation					
(Two very difficult questions but please do your best to answer!)					
9. More attractive facial appearance					
10. Better figure					
<i>B. Some personal characteristics</i>					
1. Needs more excitement					
2. More sensitive to physical pain					
3. More likely to do things on the spur of the moment					
4. More fond of telling jokes					
5. Changes her interests or activities less often					
6. More critical of other members of the family					
7. More law abiding and tends to obey rules					
8. More tendency to leave home (for short or long periods; for work or pleasure)....					
9. More receptive to guidance by parents....					
10. More of an original personal style.....					

Name:	First-born		No dif- ference	Second-born	
	To a large extent	To a small extent		To a small extent	To a large extent
<i>C. Within-pair leadership</i>					
1. Tends to win a fight or argument with her twin					
2. Tends to copy her twin more					
3. Spokesman for the pair with others					
4. The first to try something new					
5. Lets the other make decisions.....					
6. Found schoolwork easier.....					
7. More natural social charm					
8. More realistic in the goals she sets herself					
9. More likely to be 'taken in' by other people					
10. More accurate assessment of her own capabilities					

<i>D. Social activities</i>					
1. More interested in meeting new people.....					
2. Restricts herself to a smaller circle of friends					
3. Enjoys going to parties more					
4. More contented to be on her own					
5. Less talkative in a large group					
6. Closer relationship with mother.....					
7. More interested in uncles, aunts, cousins, etc.					
8. Writes home more when away					
9. Takes more trouble over Christmas and birthday presents to the rest of the family					
10. Closer relationship with father					

Name:	First-born		No dif- ference	Second-born	
	To a large extent	To a small extent		To a small extent	To a large extent
<i>E. Temperament</i>					
1. A happier, more optimistic temperament					
2. More often angry about something					
3. More easy-going and takes things as they come					
4. More liable to have moods when she is low-spirited, inactive or irritable					
5. More nervous and highly strung					
6. More sensitive to criticism					
7. More confident at starting new class, school or job					
8. Less upset by separation from twin					
9. More cool-headed in emergencies					
10. Her mood depends more on her own success or failure					
11. More liable to have moods when she is unusually active, full of ideas and enthusiasm					
12. Quicker to recover from an emotional upset					

<i>F. Character</i>					
1. A more forceful personality					
2. More likely to give in graciously in an unimportant argument					
3. More likely to speak her mind even at risk of hurting someone					
4. Kinder to animals					
5. More insistent on getting her own way					
6. Sets herself higher moral standards					
7. More likely to accept failure					
8. More anxious to do well in exams					
9. Less concerned with social prestige					
10. More determined to make a career for herself					

Appendix B

Rater

Date

Rating of twin handwriting

Under zygoty, use a 5-point scale ranging from 1 = definitely monozygoty to 5 = definitely dizygoty with the mid-point 3 = don't know.

In rating the personality differences, please use a 5-point scale from 1 to 5 with a mid-point of 3 indicating no difference between the twins. Rate twin A in terms of twin B, so that:

- 5 = A is markedly more (extraverted) than B
- 4 = A is slightly more (extraverted) than B
- 3 = no difference
- 2 = A is slightly less (extraverted) than B
- 1 = A is markedly less (extraverted) than B

<i>Pair</i>	<i>Character</i>		<i>Pair</i>	<i>Character</i>	
1	Zygoty	<input type="checkbox"/>	5	Zygoty	<input type="checkbox"/>
	Extraversion	<input type="checkbox"/>		Extraversion	<input type="checkbox"/>
	Neuroticism	<input type="checkbox"/>		Neuroticism	<input type="checkbox"/>
	Verbal IQ	<input type="checkbox"/>		Verbal IQ	<input type="checkbox"/>
	Rebelliousness	<input type="checkbox"/>		Rebelliousness	<input type="checkbox"/>
	Leadership	<input type="checkbox"/>		Leadership	<input type="checkbox"/>
2	Zygoty	<input type="checkbox"/>	6	Zygoty	<input type="checkbox"/>
	Extraversion	<input type="checkbox"/>		Extraversion	<input type="checkbox"/>
	Neuroticism	<input type="checkbox"/>		Neuroticism	<input type="checkbox"/>
	Verbal IQ	<input type="checkbox"/>		Verbal IQ	<input type="checkbox"/>
	Rebelliousness	<input type="checkbox"/>		Rebelliousness	<input type="checkbox"/>
	Leadership	<input type="checkbox"/>		Leadership	<input type="checkbox"/>
3	Zygoty	<input type="checkbox"/>	7	Zygoty	<input type="checkbox"/>
	Extraversion	<input type="checkbox"/>		Extraversion	<input type="checkbox"/>
	Neuroticism	<input type="checkbox"/>		Neuroticism	<input type="checkbox"/>
	Verbal IQ	<input type="checkbox"/>		Verbal IQ	<input type="checkbox"/>
	Rebelliousness	<input type="checkbox"/>		Rebelliousness	<input type="checkbox"/>
	Leadership	<input type="checkbox"/>		Leadership	<input type="checkbox"/>
4	Zygoty	<input type="checkbox"/>	8	Zygoty	<input type="checkbox"/>
	Extraversion	<input type="checkbox"/>		Extraversion	<input type="checkbox"/>
	Neuroticism	<input type="checkbox"/>		Neuroticism	<input type="checkbox"/>
	Verbal IQ	<input type="checkbox"/>		Verbal IQ	<input type="checkbox"/>
	Rebelliousness	<input type="checkbox"/>		Rebelliousness	<input type="checkbox"/>
	Leadership	<input type="checkbox"/>		Leadership	<input type="checkbox"/>

Appendix C (see Text-figs. 1 and 2)

Assessment

(1) Professional rating

	MZ				DZ			
	Spontaneous		Copied		Spontaneous		Copied	
	Twin A	Twin B	Twin A	Twin B	Twin A	Twin B	Twin A	Twin B
Intelligence	3	4	2	2	3	3	3	4
Extraversion	2	2	2	2	1	4	1	4
Neuroticism	3	3	3	3	5	2	5	2
Rebelliousness	2	2	2	2	1	3	1	3
Leadership	1	1	1	1	1	3	1	3

Key: 1 = below average; 2 = average; 3 = above average; 4 = high; 5 = exceptionally high.

(2) Amateur ratings—within-pair differences

	MZ	DZ
Intelligence	22	23
Extraversion	22	12
Neuroticism	25	25
Rebelliousness	24	18
Leadership	23	22

Key: 40 = A much more; 32 = A a little more; 24 = no difference; 16 = B a little more; 8 = B much more.

(3) Objective analysis

	MZ		DZ	
	Twin A	Twin B	Twin A	Twin B
Words per first five lines (spontaneous)	51	64	42	36
Height of first five lines (spontaneous)	1- $\frac{5}{16}$ in.	1- $\frac{3}{16}$ in.	1- $\frac{7}{8}$ in.	2- $\frac{3}{8}$ in.
Slope of fifth line (spontaneous)	90°	90°	90°	93°
Slope of first upright letter (copied)	85°	86°	89°	113°
Height of first 'M' (copied)	2 mm	2 mm	3 mm	6 mm

My dear Brother and Sister,

(A) How is it I have not heard from you for so long? You know how I love your letters. I am still at Wentworth Place, in fact I have kept indoors lately to rid myself of a sore throat. So I have not been to see Mother and Father since my return from Chichester. Nothing worth speaking of happened at either place.

I look back upon the last month and find little to write about. Indeed, I do not recollect one thing particular in it. It's all alike; we keep on breathing; the only amusement is a little scandal, a laugh at a pun - and then, after all, we wonder how we could enjoy the gossip or laugh at the jest!

My dear Brother and Sister,

(B) How is it I have not heard from you for so long? You know how I love your letters. I am still at Wentworth Place, in fact I have kept indoors lately in order to rid myself of a sore throat. So I have not been to see Mother and Father since my return from Chichester. Nothing worth speaking of happened at either place.

I look back upon the last month and find little to write about. Indeed, I do not recollect one thing particular in it. It's all alike; we keep on breathing; the only amusement is a little scandal, a laugh at a pun - and then, after all, we wonder how we could enjoy the gossip or laugh at the jest!

Text-fig. 1. Parts of copy letters of MZ twins 1A and 1B assessed in Appendix C.

My dear Brother and Sister

(A) How is it I have not heard from you for so long? You know how I love your letters. I am sick of Wentworth Place, in fact I have kept indoors lately in order to rid myself of a sore throat. So I have not been to see Mother and Father since my return from Chichester. Nothing worth speaking of happened at either place.

I look back upon the last month and find little to write about. Indeed, I do not recollect one thing particular in it. It's all alike; we keep on breathing; the only amusement is a little scandal, a laugh at a pun - and then, after all, we wonder how we wonder how we could enjoy the gossip or laugh at the jest!

My dear Brother and Sister

(B) How is it I have not heard from you for so long? You know I love your letters. I am still at Wentworth Place, in fact I have kept indoors lately in order to rid myself of a sore throat. So I have not been to see my mother and father since my return from Chichester. Nothing worth speaking of happened at either place.

I look back upon the last month and find little to write about. Indeed, I do not recollect one thing particular in it. It's all alike; we keep on breathing; the only amusement is a little scandal, a laugh at a pun - and then, after all, we wonder how we could enjoy the gossip or laugh at the jest!

Text-fig. 2. Parts of copy letters of DZ twins 7A and 7B assessed in Appendix C.

(A) I, myself, derive quite a bit of satisfaction and pleasure from being a twin. I find it very comforting to know that there is someone on whom I can rely, someone in whom I can confide and tell my troubles and discuss my problems with, knowing that I will be given as much help as possible. It is also very satisfying to know that there is someone who is quite willing to confide in you and I like to do my best in helping my twin sort out her problems.

My sister and I have a very good relationship and are very close to each other and I am sure we both feel that we help boost each other's morale and certainly give each other more self-confidence when we go out together.

(B) Twins are considered by singletons to be rather unique in some respects. In my opinion, I like being different from the large percentage of the population. I find we are much closer to one another in certain ways. I enjoy having a sister my own age as we can express our views on various things and we generally know what we are talking about. A twin is far more concerned about the other's safety and whereabouts. There is always the added advantage of borrowing one another's clothes and meeting each other's boyfriends.

Text-fig. 3. Parts of spontaneous essays 'On being a twin' by DZ twins 4A and 4B. Note similarity of writing.

My dear Brother and Sister,

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(A)

I look back upon the last month and find little to write about. Indeed, I do not recollect one thing particular in it. It's all alike; we keep on breathing; the only amusement is a little scandal, a laugh at a pun - and then, after all, we wonder how we could enjoy the gossip or laugh at the jest!

Text-fig. 4. Parts of copy letters of MZ twins 21A and 21B. Twin 21B is left-handed.