

## TWINS IN SCHOOL CLASS

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As a basis of studying the behaviors of twins in a school class, we have first studied, through behavior observations and analysis of sociometries, the process of how the students of a first year class of the Middle School (in 1952, 1953 and 1954) gradually split into several small groups.

The results are as follows.

A. The results obtained through the behavior observations.

- 1) At the very first stage of their new school life in April, the factors which make a student keep close to another are such environmental conditions as proximity of their seats, being graduates of the same elementary school, etc. In about ten days, however, the whole class would play together and around the summer vacation (from the middle of July to the end of August). They would be split into small groups.
- 2) Boys are inclined to play games in the whole class without any particular leader.
- 3) Girls usually split into small groups (with a leader in each groups) earlier than boys. For this reason, those who fail to belong to any of these groups become conspicuously alone.
- 4) There are little contacts between boys and girls.
- 5) The presence of twins in a class, if they are comparatively few in number, has very little influence on the formation of groups. However, in class twins occupy half a class and if they are all in pairs, the teamwork of the class becomes close. If they are separated in different classes, contacts between those classes are considerably strengthened.

B. The results obtained by the analysis of sociometries.

- 1) The same results were achieved as items 2, 3, and 4 of A above.
- 2) There are very few groups consisting exclusively of twins. There are very few cases in which non-twins choose twins as their friends because of the latter's twinship. However, when non-twins choose twins, they choose them in pairs in comparatively many cases.

Generally speaking, the results of both the behavior observations and the sociometry analysis agree with each other in the broad outline though they disagree in some details. These differences occur mainly because the behavior observations deal directly with the actual behaviors of the students whereas sociometries are diagrammatic expressions of their thoughts which might not accord with their behaviors. We may therefore conclude that the study of behaviors require the employment of both of the two above mentioned methods at the same time.

As reported in the previous articles, behaviors of individual students in school life are greatly determined by the class factor. Whether a pair of twins belong to the same class or whether the twins are separated in different classes has much to do with their twin relationship. The following

are the results of behavior observation concerning the above mentioned point.

A Twinrelationship between a pair of twins who are separated in different classes, comes under of the following three categories, i.e. "No contact at all," "A little contact" and "Close contact."

Chart A

	EZ		ZZ		PZ	Total
	M	F	M	F		
No contact	5	0	1	1	1	8
A little contact	1	4	0	0	0	5
Close contact	2	4	0	0	0	6

- 1) In the case of female EZ, there is no pair of twins who have no contact between themselves.
  - 2) In the case of PZ and ZZ, few pairs of twins have contacts between themselves.
  - 3) Boy twins who are separated from their twin brothers would play only with their classmates, which girl twins, who are separated, would see their twin sisters once at every recess.
- B. Twinrelationship between a pair of twins who are in the same class, comes under one of the following three categories, i.e. "Always together," "Sometimes together and sometimes separated" and "Always separated."

Chart B

	EZ		ZZ		PZ	Total
	M	F	M	F		
Always together	7	2	2	0	0	11
Sometimes together and sometimes separated	1	1	1	1	0	4
Always separated	0	3	0	1	3	7

- 1) Most male EZ are always in pairs, while in female EZ, we find more pairs separated. (which is contrary to the tendency seem in Chart A.) This tendency might refer to the facts stated in A-2, 3.
- 2) None of ZZ, non PZ pairs are together.
- 3) Some twins would play only with their twin brothers or twin sisters and they are completely outside the rest of the class. The majority of twins, however, would jone, in pairs, the groups of non-twins. Sometimes, a pair of twins, while participating in a game with other students, would play with each other, thus momentarily forming a small group within the bigger one.

Also, a pair of twins would sometimes form a working team against the whole class. This is seen only in the twins who are always together.

C. Some of the marked tendencies in twinrelationship seen in sociometries.

- 1) Many pair of twins belong to the same group. This tendency is marked more in boy twins than in girl twins.
- 2) PZ twins are always separated.
- 3) There are not many reciprocal choice between twin brothers.
- 4) In many cases, the social distance point of a twin are similar to those of his or her twin brother or twin sister.
- 5) Those twins whose social distance points are low, that is, those who are isolated from the rest of the class students, choose each other or they are separated in different groups.

D. The following chart shows the relations between the respective results of the two methods of study (i.e. behavior observation and analysis of sociometry) concerning twinrelationship determined by a class.

Chart C

Behavior observation	Sociometry			
	Always together in the same group	Almost al- ways together in the same group	Separated	Total
Always together in the same group	9	2	0	11
Almost always together in the same group	1	0	2	3
Separated	0	4	3	7
Total	10	6	5	21

The corelation between the two results is significant at 0.003% level.

## PERSONALITY DIFFERENCE BETWEEN MEMBERS OF IDENTICAL TWIN BEING EVOKED BY DIFFERENTIAL TREATMENT OF THE PARENTS.

By Miki, Yasumasa and Amau, Yukiko

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### I. Elder-Brother-Like and Younger-Brother-Like

#### Problem

Despite their similarities, it is known that there are some differences in personality between identical twins.

According to the observations of Suwa and Okada, it seems that some of these differences may be reduced to the differences between elder-brother-like characteristics and younger-brother-like characteristics. These differences may be dependent on (1) the Japanese family system in which elder son and younger son are differently treated by parents and other members of the family and (2) the superior-inferior relationship or interdepending relationships due to differences in physical and mental capacities between two members who are essentially identical and are always compared by others.

As the first approach to these problems, the authors tried to make up a convenient questionnaire to evaluate elder-brother-like personality and younger-brother-like personality.

#### Subjects and procedures

Based on Suwa and Okada's observations on fraternal personality differences, a questionnaire consisting of 45 items was composed. Each item described on behavior characteristic. The subjects was expected to answer whether this characteristic was more dominant in him or in his brother. If it was difficult to decide, the subject was allowed to check "not known."

This questionnaire was answered by 31 pairs of mal identical twins, 24 pairs of female identical twins, and 274 boys (76 from residential quarters, 105 from commercial and industrial quarters of Tokyo and 93 from rural area) and 256 girls (62, 96, 98 respectively). The non-twin all had siblings of the same sex and the age difference being less than 3 years. All subjects were 12-14 years old.

#### Results

The results are shown in Table 1 for each item according to whether differences between responses "elder" and "younger" are statistically significant or not. In this table the sign ㊦ means that the item got significantly larger number of "elder responses in the group, while ㊧ means that the "younger" responses were prevailing. The signs ㊦ and ㊧ means that though the differences were significant, the item also had "not known" responses larger than the critical number. The sign A, B, a, and b indicate that there were some tendencies but not significant.

Following results are found from Table 1:

1. Fraternal personality differences between nontwin siblings were greater than those between identical twins.
2. Fraternal personality differences were greater in brothers than in sisters.
3. Younger-brother-like characteristics are more definite than the elder-brother-like characteristics.
4. Fraternal personality differences are more marked in rural children than in the city children, and more in commercial quarters than in residential quarters.
5. Fraternal personality differences were detected by following items:

1. item 22 Likes to play outdoors.....younger.
  2. item 17 More easily influenced by others.....younger.
  3. item 21 Is dependent in difficult situations.....younger.
  4. item 5 More concerned whether his actions will bother people.....elder.
  5. item 32 Is concerned unless every thing is in order.....elder.
  6. item 15 Stops playing immediately when necessary even though he would like to continue playing.....elder.
  7. item 2 Talkative.....younger.
  8. item 35 Is kind.....elder.
  9. item 25 Is a leader.....elder.
  10. item 44 Carry through on his places.....elder.
  11. item 38 Entertains others by telling jokes and funny stories.....younger.
6. Fraternal personality differences between twins had similar tendencies.
  7. Personality characteristics of elder brother type were manifested by self-control, moderate, neatness, kindness, leadership, and sense of responsibility, personality characteristics of younger brother type were manifested by gaiety, sociability, easily influenced, dependency, talkativeness, and humorous.

By improving these items of the questionnaire, it is felt that personality characteristics of the elder brother type and the younger brother type can be further studied.

## II. On the Relationship between Personality Differences of Identical Twins and Their Treatment by the Family.

In Japan there is a great difference in the treatment of the child depending upon his position in the family. In this research an attempt was made to study the relationship of the personality differences between identical twins and their treatment by the family in light of the above mentioned fact.

As the first approach the following questionnaire was made.

1. Do you treat the twin differently ?
2. Is the order in which baths are taken or the seating at the dinner table strictly followed in your family ?
3. Do you treat the elder as the superior ?
4. When they quarrel do you arbitrate or scold based on the reason that they are the elder or the younger ?
5. Which did you feed first during infancy ?
6. Which did you bathe first during their infancy ?
7. Which of them do you wake first in the morning ?
8. Which do you serve first at meals and at snack time ?
9. Which do you call first when you call them at the same time ?

10. Which do you introduce first to others ?
11. Then there is an important errand to be done which one do you ask to do it ?
12. Which do you ask to preform simple errands ?
13. Which do you consult about important matters ?
14. At the present which do you depend on more ?
15. Which do you expect to be more successful in the future ?
16. Do the children feel that they are being scolded as the elder or the younger when they quarrel ?
17. Do the children feel that that they are treated as the elder or the younger ?
18. Are the twins aware that one is the elder and the other is the younger ?

Which member of the twin was treated as an elder brother by the family was determined by totaling the number of times he was named in the following 14 items—items 1, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 17. The result is shown in Fig. I (x-male, o-female).

Although parents say that they treat the twins in the same manner, in reality there is a difference.

As the next step 10 items were chosen from the study which has been reported in a previous article. These 10 items were chosen because it was felt that these best differentiated between elder-brother-like characteristics and younger-brother-like characteristics.

The index of the elder-brother-like characteristic was the number of his elder-brother-like responses to these ten questions. This also applied for younger-brother-like characteristic for the younger brother. (These items were scored by both members of the twins and by the parent. The total score would therefore be 30.) The results are shown in Fig. II.

The following is taken from Fig. I and II.

Male N-38 Pairs				Female N-30 Pairs		
	Family treatment differentiates between twins	Does not differentiate	Total			
Difference is clear between elder and younger	6	2	8	8	2	10
Somewhat clear	12	11	23	2	10	12
Not clear	1	6	7	3	5	8
Total	19	19	38	13	17	30

The correlation between the extent to which treatment by the family differs and the extent to which the fraternal personality differences of the identical twins exists is significant at the 1%

level.

Needless to say the treatment by the family is not the only factor in personality development but it appears that the treatment by the family, that is the family system, plays a role in formulating personality.

## TWINRELATIONSHIP

By Miki, Yasumasa and Amau, Yukiko

### I. Twinrelationship observed in the Summer Camp at Lake Nojiri.

As reported in "Twins in School Class", we have obtained an interesting result concerning the behaviors of each twin. However, as to the observation of their relationship, we got little result except "no contact at all" or "close contact". As they are obliged to obey various rules in school life, we can not observe free behaviors in their twinrelationship. The summer camp at Lake Nojiri gives us a good chance to observe their twinrelationship in detail.

First of all, we have decided to classify the relationship between the twins into the following categories. (a-d)

#### (a) Equal relationship

- 1) Independence    The twins behave independently of each other.
- 2) Competition    The twins compete with each other as a rival.
- 3) Co-operation    The twins co-operate with each other for a common purpose.
- 4) Play            This is occasionally observed in a school class. The twins play and joke with each other, as if they are two puppies, and they do not mind how other friends think of them.

#### (b) Leader-depender's relationship

- 1) Leader-depender relationship    One takes leadership over the other in a natural manner.  
No conflict occurs between them.
- 2) Tyrant-follower relationship
- 3) Tyrant-hermit relationship    One always keeps the other under his control. As a result, the latter tries to avoid the former.
- 4) Tyrant-rejector relationship
- 5) Tyrant-resistant relationship

#### (c) Flattery

- 1) Flattery-indifference case    One is indifferent to the other's flattery.
- 2) Flattery-rejection case    One rejects the other's flattery.

#### (d) Avoidance

- 1) One-sided avoidance    One dislikes the other.

2) Mutual avoidance They dislike each other

We have tried to observe mainly the behaviors of twins in each scene of their daily life such as swimming, getting up, taking meal and cleaning room, etc.

The number of the subject observed are as follows:

Identical twin	{ male 18 pairs female 20 pairs }	total 54 pairs
Fraternal twin	{ male 7 pairs female 6 pairs opposite sex 2 pairs }	
Specificity unknown male twin	1 pair	

They entered our school in 1953 through 1955.

Results Chart I shows the relation between the patterns of behaviors

Chart I

Relationship		identical	fraternal		unkown	total
			same sex	opposite sex		
equal	independence	8	4	1		13
	competition	4				4
	co-operation	13	3			16
	play	1				1
leader-depender	leader-depender	9	5		1	15
	tyrant-follower	2				2
	tyrant-hermit					0
	tyrant-rejector					0
	tyrant-resistant					0
flattery	flattery-indifference					0
	flattery-rejection					0
avoidance	one-sided		1			1
	mutual	1		1		2

1. "Co-operation" is most outstanding. "relationship of leader and depender", "independence" are also remarkable.
2. Really, the twins show various patterns of behaviors. The patterns listed in chart I are the most outstanding of each pair. It shows that we have often observed the elder brother and younger brother relationship in identical twins' co-operative behaviors.
3. Fraternal twins of opposite sexes often show "independence" and "avoidance relationship".
4. No "flattery" is observed.
5. In two particular cases, we have observed the "tyrant-follower relationship". Generally, the relations between twins are very friendly. It is very rare that they do not unbosom themselves with each other.

Thus, the twinrelationship is not simple. The question is why such complexity of twinrelationship has been formed in spite of their equal conditions in birth?



Probably, we should study the difference between the twins from the point of "sense of partnership", domestic environment, physical and mental powers.

This time we have taken up the factor of "sense of partnership".

## II. Sense of partnership in twin brother

In this study, we define the term "sense of partnership" as "the familiar feelings toward each other which help twins to understand each other".

First of all, we made a questionnaire with 26 items concerning "sense of partnership" between the pair of twin. We assumed that "the sense of partnership" can be divided into four categories: "feeling of interdependence", "identification", "mutual aid" and "joint defence".

The results are as follows:

- (a) As a whole, the girls's scores of "sense of partnership" are higher than the boy's score in middle-school age. But the degree of "joint defense" of each sex are about equal.
- (b) From the developmental point of view.
  - 1) We find the tendency that the scores of "sense of partnership" in the 3rd year class are higher than the scores in the 1st year class.
  - 2) Most twins in the 3rd year class are not happy about the fact that they are twin.
  - 3) The twins in senior grades do not like to wear the same clothes. However, most of their parents give them similar clothes. As they grow, there will be some conflict between parents and children concerning the parents' treatment of their children.
- (c) Relation between "the sense of partnership" and the treatment at home.
  - 1) In cases of boys, no relation is observed between "the sense of partnership" and the discriminative treatment at home. On the contrary, in cases of girls, we notice the interactions between the two factors.
  - 2) No relation is observed between "the sense of partnership" and the parents' attitude of giving things to the children.
- (d) Relation between "the sense of partnership" and observed behavior.

The pairs of twin which show higher degree of score are co-operative and friendly in their daily life. Those who show low scores are separated from each other or they avoid each other.

## SOME PROBLEMS CONCERNING SCHOOL RECORDS OF TWINS

By Iwashita, Tomizo

The Fuzoku Chugakko (the 3-year lower secondary school attached to the Faculty of Education of Tokyo University) began to accept applications of twins for admission to the school in 1948. Up to the present time (1954) 67 twins have been admitted to the school. Every year the number

of twin applicants gradually increased. As a result their school records at Shogakko (the 6-year elementary school), which have to be filed with the application, have amounted to a considerable number. The twins enrolled at the Fuzoku Chugakko have been studied and observed by the teachers. This treatise, using those data, analyzes some problems concerning the school records of twins. A summary of the method, of the results and the analysis follows:

I. The date of the research are:

1. School records at Shogakko from the third grade to the sixth grade of 201 twins—141 identical twins (EZ), 41 fraternal twins of the same sex (ZZ), plus 19 fraternal twins of opposite sexes (PZ). (Table 2)
2. The school records at Chugakko and the results of observation and studies of 67 twins who have been to the Fuzoku Chugakko, including 50 EZ, 10 ZZ, 5 PZ, and 2 twins who cannot be determined as identical or fraternal twins. (Table 1)

II. In regards to the amount of data in this research, it surpasses those of Frischeisen-Köhler, Lethovaara and Fukuoka who also studied the school records of twins, because, in this research, we have all the records from the third grade to the sixth grade of 201 twins. (Table 3)

III. There arise some questions when we try to study the pair differences in school records. What scale is used when evaluating? The attitude of evaluation, namely, how is it evaluated? What is the pair difference?

As our study aims to compare with the study of Frischeisen-Köhler, we adopted her idea of the pair difference—the deviation from the average score of twin brothers' school marks, which is  $\frac{1}{2}$  of the subtraction value between school marks of twin brothers.

IV. The evaluating scale of Japanese schools is now the 5 point system like that of Germany when Frischeisen-Köhler did research, so the values of pair difference (mother language, social studies, arithmetic, nature studies, music, drawing and gymnastics in the elementary school) are almost equal to those of Frischeisen-Köhler. (Diagram 2)

V. Comparing the pair differences of EZ and ZZ, we find the former gets marks worse than the latter in all cases, and a comparison between ZZ and PZ shows that ZZ is lower than PZ. This proves that school work is considerably influenced by some hereditary factors. (Table 4) (Diagram I)

VI. From this research, we can point out the limit and the average amount of the pair difference in elementary school marks. When evaluated by the 5 point system, the pair difference does not exceed 0.20 by EZ, and 0.30 by ZZ; the average amounts of pair differences are about 0.14 at EZ, and about 0.24 at ZZ. The pair difference of PZ some times exceed 0.30. When we pick up a pair at random from non-twin children, we can except by statistical procedures that the pair difference will be 0.55. (Table 4)

VII. Comparing the averages of EZ pair differences, the score of the female is 0.05 lower than that of the male. Does it not mean that a Japanese girl is more influenced by heredity than

- a boy in other words, environment does not influence her very much? (Table 4) (Diagram 5)
- VIII. The pair difference between the secondary school marks of twin brothers is greater than that of elementary school, especially in the female. This is probably the sign of entering into adolescence, as Frischeisen-Köhler explained it. (Table 4) (Table 8)
- IX. The result of this research agrees with Frischeisen-Köhler's in the fact that the pair difference in the arithmetic marks of EZ and ZZ has special features. The pair difference of EZ is great, and the gap between EX and ZZ is small. This means that arithmetic school work is easily influenced by environment, including guidance of learning. (Diagram 2)
- X. In this research, the score of pair differences is especially small in music. By this fact, we can conclude that music is strongly influenced by heredity. (Table 4) (Diagram 1)
- XI. According to this research, the average school record of twins is a little lower than that of non-twin children. Since this is true both in EZ and ZZ, the cause is more likely in heredity, than in environment. One of the causes is undoubtedly the "situation gémellaire" unique situation of being a twin and being always the object of other's attention, as was pointed out by Zazzo in relation to the cause of the lowness of twins' IQ's. (Table 9) (Diagram 6)
- XII. In Japan one of twin brothers is treated as the elder, and the other as the younger. Does this custom influence the school marks of twins? Yes, generally speaking, the elder is a little superior to the younger. This is the answer of this research. (Table 9) (Diagram 6)
- XIII. When we compare the male with the female by the data of 19 PZ, without recognizing elder or younger, the male is superior to the female.
- XIV. By observing and studying twins who are in the Fuzoku Chugakko, we can gain many valuable results. For example, EZ's work in manual work (Picture 1), drawing (Picture 2), handwriting (Picture 3), athletic records (Table 12), the content of composition, errors which are discovered in learning English, all show the resemblance between twin brothers. But, together with that resemblance, we do not fail to notice individual differences. The answers to the question, "Which colour do you like best?" also show great resemblance. (Table 11)

## A STUDY ON THE PERSONALITY FORMATION OF TWINS

— With special reference to the influence of breeding and family system —

By Otsuki, Takeshi

Waseda University

Purpose of this study:

When we discuss the current educational problems, we cannot ignore the social background within which education is given. One of the most important problems of the social background of

our education is the feudalistic human relations deeply rooted in Japanese culture.

Here we took up one principles of breeding which discriminate the elder and younger ones of the siblings as an inevitable result of our feudalistic family system.

We studied the influence of the family system upon the personality formation of identical twins. We also discussed this problem in relation with professional and economical status of the family as an indicator of how deeply the feudalistic family system is rooted.

Subjects:

31 pairs of male identical twins

34 pairs of female identical twins

5 pairs of male fraternal twins

8 pairs of female fraternal twins

1 pair of male twin, specificity unknown

1 pair of female twin, specificity unknown

All subjects were middle school pupils, ages 12-15.

Methods:

Personal interview, interview with the parents and home visiting. For further procedures and question items, see Miki and Amau;

Results:

- a) In the cases where the parents treat one of a pair of twin as elder and the other as younger, difference in personality corresponding to birth order difference between normal brothers can be found between the twin.
- b) Such families were found more in down town districts than in residential districts where residents are of higher intellectual background.

To sum up, through the behavior and the personality of twins we can clearly trace the determining face of feudalistic family system of Japan.

## SIMILARITY OF PHYSIQUE, MUSCULAR STRENGTH AND MOTOR ABILITY IN IDENTICAL TWINS.

By Mizuno, Tadafumi

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Purpose of this study

To find out the similarity of physique, muscular strength and motor ability in identical twins.

Subjects and procedures

Twenty seven pairs of identical twins, 15 pairs of boys and 12 pairs of girls, of the Middle and High School attached to Tokyo University were tested.

The items of measurement were as follows:

1. Physique: Standing height, weight, chest girth, and vital capacity.
2. Muscular Strength: Right and left grips and back left.
3. Motor Ability: (A) Standing board jump, vertical jump and baseball throw for distance.

(B) 50 meter dash, burpee-test and chinning.

For analysis of data, partial correlation coefficient (influence of age is partialled out) and mean difference between twins (%) were used as an estimating scale of similarity.

#### Results

Average	Partial Correlation			Mean Difference (%)		
	Identical twins		Control 30 pairs ♂	Identical twins		Control 30 pairs ♂
	15 pairs ♂	12 pairs ♀		♂	♀	
1. Physique	0.932	0.861	0.104	3.63		10.31
2. Muscular Strength	0.798	0.748	0.283	13.06		18.51
3. Motor Ability (A)	0.661	0.649	0.182	10.39		16.32
4. „ (B)	0.932	0.647	-0.027	23.27		32.90

#### Summary.

(1) Partial correlation coefficients of identical twins were significant, but that of the controls were not, and the correlation of twin decreased from static measurements as physique to dynamic measurements as functions of part of organism, and then to motor ability of a whole body movements, but in motor ability (B) of boy-twins the correlation increased as high as physique of them.

(2) From this facts of boy-twins, we have concluded that physique and agility are more influenced by hereditary factors, but that muscular strength measured by dynamometer or jumping and throwing is less influenced by them.