



## **A Study of Finger Length Relation (Ring finger & little finger i.e. 4D5D) with Human Personality.**

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### **Abstract:**

Several studies in the past have demonstrated a strong correlation of finger lengths ratio and human personality. This current prospective study attempts to correlate the finger length ratio of the 4<sup>th</sup> to 5<sup>th</sup> finger in males and females with the human personality traits --Psychoticism, Neuroticism & Extraversion using EPQ (Eysenck Personality Questionnaire). The hypothesis in this study is that males and females having the tip of the little fingers below the distal finger mark on the adjacent ring fingers in both their outstretched hands (arbitrarily named Group C) will have higher Neuroticism scores (i.e. they will be more anxious, worried, moody, and unstable), compared to the males and females who have the tip of the little fingers above the distal finger mark on the adjacent ring fingers in both their outstretched hands (arbitrarily named Group A). The results of this study shows that Group C females have a significantly higher Neuroticism and Psychoticism scores compared to Group A females. Similarly in case of males the results show that Group C males have a significantly higher Neuroticism and Extraversion scores compared to Group A males. So, there is a genetically predetermined physical marker i.e. whether the tips of the little fingers are above or below the distal finger mark on the adjacent ring fingers in both hands that determines the characteristic personality traits of a person.

Key words: Personality; Finger lengths(4D&5D)

### **Introduction:**

The disproportionate length of human fingers has generated much interest among researchers. Digit ratio has been shown to

correlate with several psychological traits. Women with smaller digit ratios report higher, more masculinized scores on the Bem Sex Role Inventory (Csatho et al., 2003a). Men with smaller 2D:4D ratios are perceived as being more masculine and dominant by female observers (Neave et al., 2003). The male hormone testosterone has been found to have an organizational effect on adult physical aggression in men. (Bailey-Allison-A et.al.2005) Manning and colleagues have found significant correlations between more masculine (small) digit ratios and achievement, ability, and speed in a variety of sports and in visual-spatial ability (Manning and Taylor, 2001; Manning, 2002a, 2002b). More male-like digit ratios are also associated with deleterious traits such as increased rates of autism, immune deficiency and reduced verbal fluency (Manning, 2002a). An easily measurable indicator of early action of sex hormones that relates to behavior i.e. the patterns of distal extent of finger tips was found to be similar across different human populations. Consistent sex differences were also found across the samples, (Peters-M et.al.,2002). There are also studies to show that digital growth in man could be controlled by morphogenetic gradients which may be altered in genetic disorders. (Mglinets-V-A1991).The relative stability and magnitude of genetic and environmental effects underlying major dimensions of adolescent personality across time were investigated by Gillespie Nathan-Aet.al (2004)which has revealed that familial aggregation was entirely explained by additive genetic effects.

Eysenck suggests three super factors: extraversion (E), neuroticism (N), and psychoticism (P). These super factors or dimensions of personality are orthogonal to each other, which mean that they do not correlate with each other (Eysenck & Eysenck, 1985). Furthermore, the super factors of extraversion, neuroticism, and psychoticism appear to be universal. Such universality has been demonstrated in cross-cultural studies using the Eysenck Personality Questionnaire (EPQ). Evidently, the studies show that the same dimensions of personality emerge in many different nations and cultures other than Western countries (Eysenck, 1991; Eysenck & Eysenck, 1985).

The PEN model is based on the state-trait distinction. Traits are "semi permanent personality dispositions," whereas states are "transient internal conditions" that are produced when traits and situations interact with each other (Eysenck & Eysenck, 1985).

That is, the super factors of extraversion, neuroticism, and psychoticism at the top level of the hierarchy are stable, whereas behaviors such as talking with a friend on a single occasion at the bottom of the hierarchy are changeable across time and situation. In this respect, the distinction between levels is very important for the analysis of personality in the PEN model.

In the PEN model, these dimensions or super factors are based on "constitutional, genetic, or inborn factors, which are to be discovered in the physiological, neurological, and biochemical structure of the individual" (Eysenck & Eysenck, 1985).

It has been found that a person with high extraversion is sociable, popular, optimistic, and rather unreliable, whereas a person with low extraversion is quiet, introspective, reserved, and reliable. A person with high neuroticism is anxious, worried, moody, and unstable, whereas a person with low neuroticism is calm, even-tempered, carefree, and emotionally stable. A person with high psychoticism is troublesome, uncooperative, hostile, and socially withdrawn, whereas a person with low psychoticism is altruistic, socialized, empathic, and conventional (Eysenck & Eysenck, 1985).

Neurotic individuals have greater activation levels and lower thresholds within the visceral brain. They are easily upset in the face of very minor stresses. However, emotionally stable people are calm under such stresses because they have lesser activation levels and higher thresholds (Eysenck, 1990).

Empirically, Ormel and Wohlfarth (1991) report that neuroticism indeed has strong influence on psychological distress. They find that "temperamental dispositions seem more powerful than environmental factors" in predicting psychological distress and that neuroticism is a "powerful determinant" of high psychological distress. Moreover Machiavellianism, like impulsivity, sensation seeking, and venturesomeness, was found to lie clearly in the Psychoticism+ Extraversion+ quadrant of the 3-dimensional personality sphere. (Allsopp-Jet.al1991). Wohlfarth et.al (1993) found social dysfunctioning was more pronounced in people with a psychological disorder than in those without.

Previous attempts to associate second to fourth digit ratio to the 'big-five' personality factors (extraversion, neuroticism, openness, conscientiousness and agreeableness) were found to

be weak (Manning-John-T et.al 2004). Evidence for associations in the expected direction was found for sensation seeking, psychoticism and neuroticism, in all cases for females only. No association was found between digit ratio and cognitive test scores (Manning-John-T et.al.2002)

This current prospective study attempts to correlate relative length of the fourth to fifth finger (4D&5D) in males and females with the personality traits Psychoticism, Neuroticism & Extraversion (as in the PEN model) using EPQ-R (Eysenck Personality Questionnaire-Revised).

The hypothesis in this study is that males and females having the tip of the little fingers below the distal finger mark on the adjacent ring fingers in both their outstretched hands (arbitrarily named Group C) will have higher Neuroticism scores (i.e. they will be more anxious, worried, moody, and unstable), compared to the males and females who have the tip of the little fingers above the distal finger mark on the adjacent ring fingers in both their outstretched hands (arbitrarily named Group A).

## Methods

EPQ-R (Eysenck Personality Questionnaire-Revised) was applied to randomly selected 112 normal healthy subjects {28 males and 28 females belonging to Arbitrary Group C (*having the tip of the little fingers below the distal finger mark on the adjacent ring fingers in both their outstretched hands*)} and {28 males and 28 females belonging to Arbitrary Group A (*who have the tip of the little fingers above the distal finger mark on the adjacent ring fingers in both their outstretched hands*) }.

The volunteers belonged to the city of Kolkata, India and their age ranged from 16yrs to 60yrs. They had no past or present history of mental illnesses. Persons having different 4<sup>th</sup> & 5<sup>th</sup> finger relation other than specified in the above Groups A & C in this study were not included here. Participants completed a questionnaire EPQ Eysenck Personality Questionnaire and their 4<sup>th</sup> finger&5<sup>th</sup> finger i.e. 4D5D Relation were correspondingly noted.

## Results

This study shows:

### In Males:

- 1. Psychoticism:** There is no significant difference in the between psychoticism scores of the males belonging to Groups A and C in this study.
- 2. Extraversion:** The males belonging to Group C definitely showed **higher extraversion scores** (significant difference acceptable at 0.05 levels) compared to the males of Group A in this study i.e. the Group C males are more "sociable, popular and optimistic and rather unreliable".
- 3. Neuroticism:** the males belonging to Group C definitely showed **higher neuroticism scores** (significant difference acceptable at 0.05 level) compared to the males of Group A. i.e. Group C males are more prone to be "anxious, worried and moody and unstable" than the males belonging to Group A.
- 4. Lie:** There is no significant difference in the between the Lie scores of the males belonging to Groups A and C in this study.

### In Females:

- 1. Psychoticism:** Females belonging to Group C showed **significant higher** (difference acceptable at 0.05 level) Psychoticism scores compared to the females of Group A i.e. Group C females are more prone to be "troublesome, uncooperative, hostile and socially withdrawn".

**2.Extraversion:** There is no significant difference between the extraversion scores of females belonging to Groups A & C in this study.

- a. It may have been significantly higher in Group C females if the sample size would have been higher (for  $df=1$ , critical value of chi square at 0.05 significance is 3.84 and calculated value of chi square in this study was 3.34)

**3.Neuroticism:** Group C females scored higher (significant difference acceptable at 0.05 & 0.01 level) compared to females belonging to Group A in this study. Group C females are therefore more prone to be "anxious, worried and moody and unstable."

**4. Lie:** There is no significant difference in the between the Lie scores of the females belonging to Groups A and C in this study.

	PSYCHOTICISM				NEUROTICISM				EXTRAVERSION			
	A(M )	C(M )	A(F )	C(F )	A(M )	C(M )	A(F )	C(F )	A(M )	C(M )	A(F )	C(F )
1	4	7	6	10	3	8	7	8	5	5	6	4
2	4	10	5	4	4	5	6	5	4	6	5	9
3	6	6	5	10	5	5	4	9	8	6	2	6
4	6	4	8	7	5	8	7	5	5	7	4	9
5	7	7	7	8	5	8	5	9	6	8	8	3
6	9	6	8	10	4	4	2	5	6	3	7	6
7	5	4	4	4	4	5	6	3	4	6	6	7
8	9	6	6	6	6	8	8	6	6	7	6	8
9	6	7	0	8	4	5	3	4	6	6	8	4
10	4	4	7	9	4	4	6	6	6	9	9	5
11	4	6	7	0	0	4	7	4	6	9	6	6
12	0	4	7	6	5	5	8	4	4	6	7	7
13	8	7	8	8	6	6	6	6	6	8	4	8
14	4	6	8	9	3	6	2	7	5	6	6	4
15	10	6	8	6	7	4	3	8	5	6	2	1
16	8	10	0	4	7	6	2	6	6	8	2	5
17	5	7	10	7	6	3	4	6	3	8	6	8
18	7	7	10	5	6	6	7	8	6	5	5	7
19	4	4	7	7	3	8	6	6	1	8	4	5
20	7	7	0	7	6	7	2	7	7	6	7	8
21	4	4	7	8	4	8	7	8	4	6	6	9
22	7	5	6	5	8	7	5	6	7	7	4	5
23	6	7	0	8	2	3	4	8	5	8	2	6
24	8	6	4	7	2	8	2	8	8	9	1	7
25	6	7	0	8	6	8	1	7	3	6	3	6
26	8	6	0	5	8	5	2	6	3	5	2	7
27	6	9	4	8	8	6	2	9	8	6	4	4
28	5	7	4	5	2	7	3	6	3	6	5	5

167 176 146 189

133 167 127 180

146 186 137 169

**STEN SCORES (PSYCHOTICISM, NEUROTICISM, EXTRAVERSION)**

A=Group A  
C=Group C

M=Male  
F=Female

<b>LIE SCORES</b>			
A(M)	C(M)	A(F)	C(F)
10	7	8	6
4	5	9	10
10	10	8	5
8	8	6	9
8	6	9	10
7	7	4	9
10	9	6	8
9	4	10	5
9	8	5	10
6	8	7	10
10	6	7	6
10	5	8	5
6	7	8	6
10	6	10	8
7	5	6	8
7	9	7	7
5	10	8	10
8	9	7	4
10	10	9	4
6	5	10	9
7	6	9	7
6	7	10	4
9	9	5	9
8	7	6	5
6	3	4	8
5	7	3	7
4	7	4	8
8	7	3	9

213 197 196 206

**STEN SCORES (LIE)**



## IN MALES:

### A. PSYCHOTICISM (MALE)

A (Male)		C (Male)	
167		176	
	fo	fe	SUM (fo-fe)(fo-fe)/fe
A(M)	167	171.5	0.11
C(M)	176	171.5	0.11

chi square=0.22

df=1

**NOT SIGNIFICANT AT ANY LEVEL**

### B. EXTRAVERSION (MALE)

A (Male)		C (Male)	
146		186	
	fo	fe	SUM (fo-fe)(fo-fe)/fe
A(M)	146	166	2.4
C(M)	186	166	2.4

chi square=4.80

df = 1

**SIGNIFICANT AT 0.05 LEVEL**

### C. NEUROTICISM (MALE)

A (Male)		C (Male)	
133		167	
	fo	fe	SUM (fo-fe)(fo-fe)/fe
A(M)	133	150	1.926
C(M)	167	150	1.926

chi square= 3.825

df = 1

**SIGNIFICANT AT 0.05 LEVEL**

### D. LIE (MALE)

A (Male)		C (Male)	
213		197	
	fo	fe	SUM (fo-fe)(fo-fe)/fe
A(M)	213	205	0.312
C(M)	197	205	0.312

chi square=0.624

df = 1

**NOT SIGNIFICANT AT ANY LEVEL**

**RESULTS IN FEMALES:**

**A. PSYCHOTICISM (FEMALE)**

A(Female)		C(Female)	
146		189	
	fo	fe	SUM (fo-fe)(fo-fe)/fe
A(F)	146	167.5	2.759
C(F)	189	167.5	2.759

df=1 chi square=5.518

**SIGNIFICANT AT 0.05 LEVEL**

**B. EXTRAVERSION (FEMALE)**

A(Female)		C (Female)	
137		169	
	fo	fe	SUM (fo-fe)(fo-fe)/fe
A(F)	137	153	1.67
C(F)	169	153	1.67

df=1 chi square=3.34

**NOT SIGNIFICANT AT ANY LEVEL**

**C. NEUROTICISM (FEMALE)**

A (Female)		C (Female)	
127		180	
	fo	fe	SUM (fo-fe)(fo-fe)/fe
A(F)	127	153.5	4.57
C(F)	186	153.5	4.57

df = 1 chi square=9.14

**SIGNIFICANT AT 0.01 & 0.05 LEVEL**

**D. LIE (FEMALE)**

A(Female)		C (Female)	
196		206	
	fo	fe	SUM (fo-fe)(fo-fe)/fe
A(F)	196	201	0.124
C(F)	206	201	0.124

df=1 chi square=0.248

**NOT SIGNIFICANT AT ANY LEVEL**

## ARITHMETIC MEAN

### PSYCHOTICISM

GROUP A(Male) = 5.96

GROUP C(Male) = 6.28

GROUP A(Female) = 5.21

GROUP C(Female) = 6.75

### NEUROTICISM

GROUP A(Male) = 4.75

GROUP C(Male) = 5.96

GROUP A(Female) = 4.54

GROUP C(Female) = 6.42

### EXTRAVERSION

GROUP A (Male) = 5.21

GROUP C (Male) = 6.64

GROUP A(Female) = 4.89

GROUP C(Female) = 6.04

### LIE SCORE

GROUP

A(Male) = 7.6

GROUP

C(Male) = 7.03

GROUP A(Female) = 7

GROUP C(Female) = 7.35

□

## FIGURES

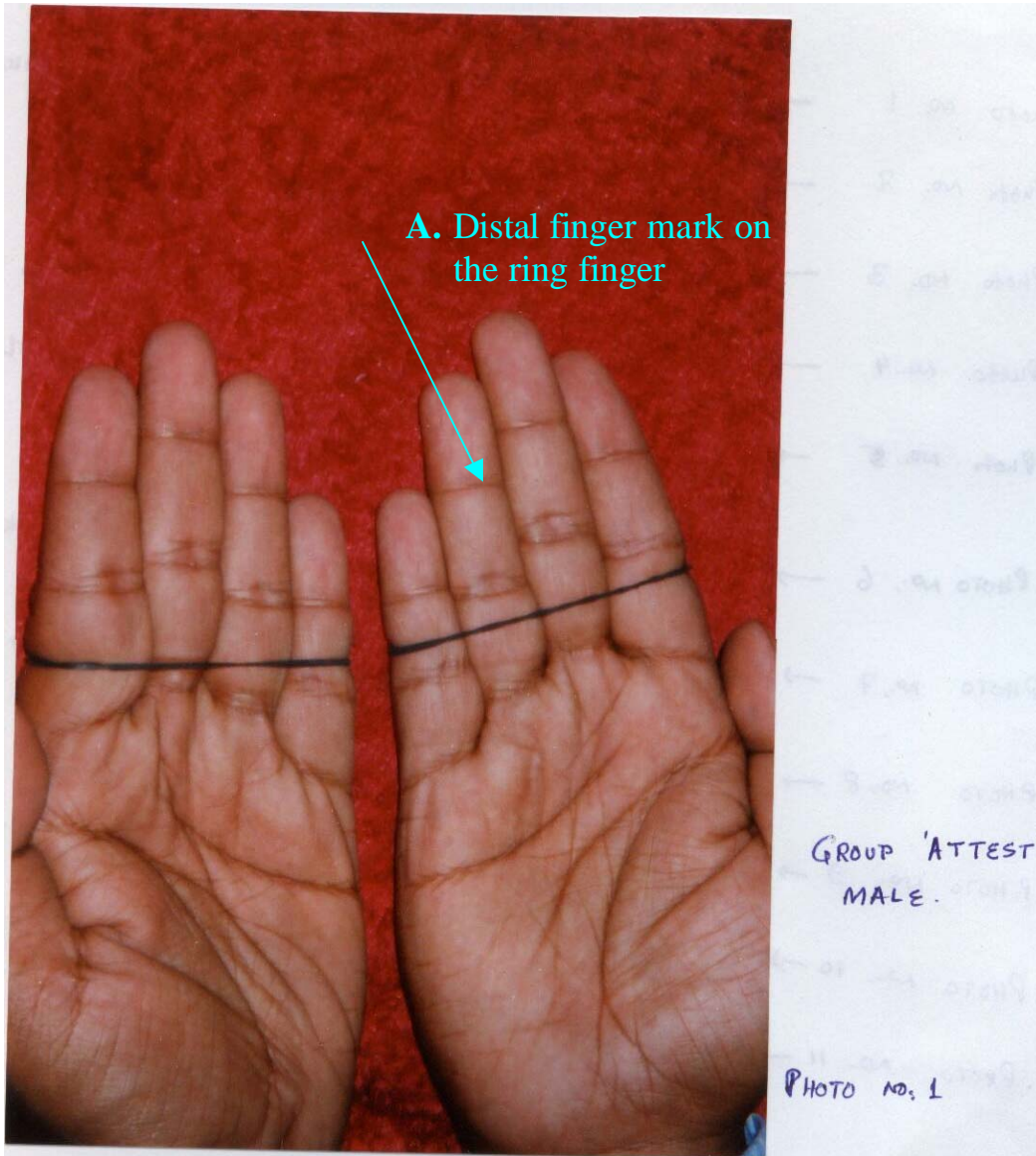


PHOTO NO.1 GROUP A MALE. (*Who have the tip of the little fingers above the distal finger mark on the adjacent ring fingers in both their outstretched hands*)

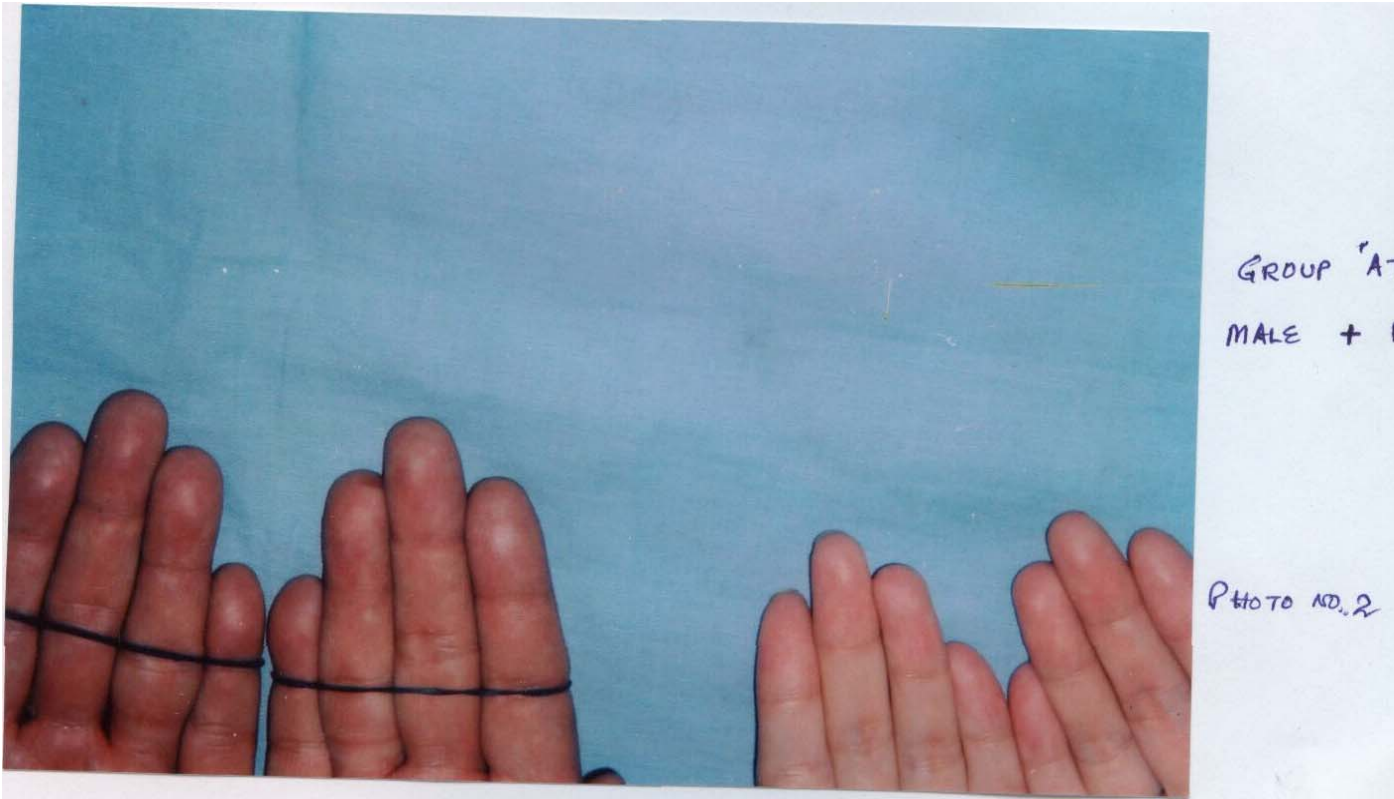


PHOTO NO. 2. GROUP A MALE AND GROUP A FEMALE (*who have the tip of the little fingers **above** the distal finger mark on the adjacent ring fingers in both their outstretched hands*)

□

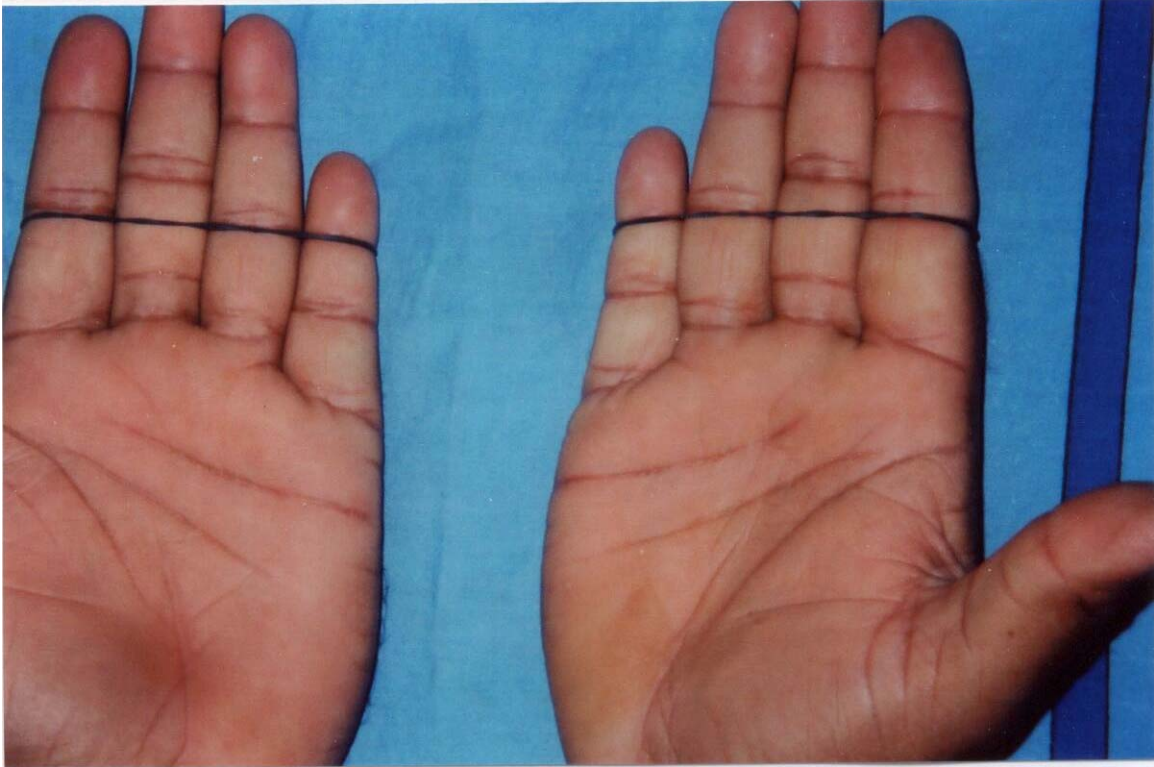


PHOTO NO. 3. GROUP C MALE (*having the tip of the little fingers **below** the distal finger mark on the adjacent ring fingers in both their outstretched hands*)



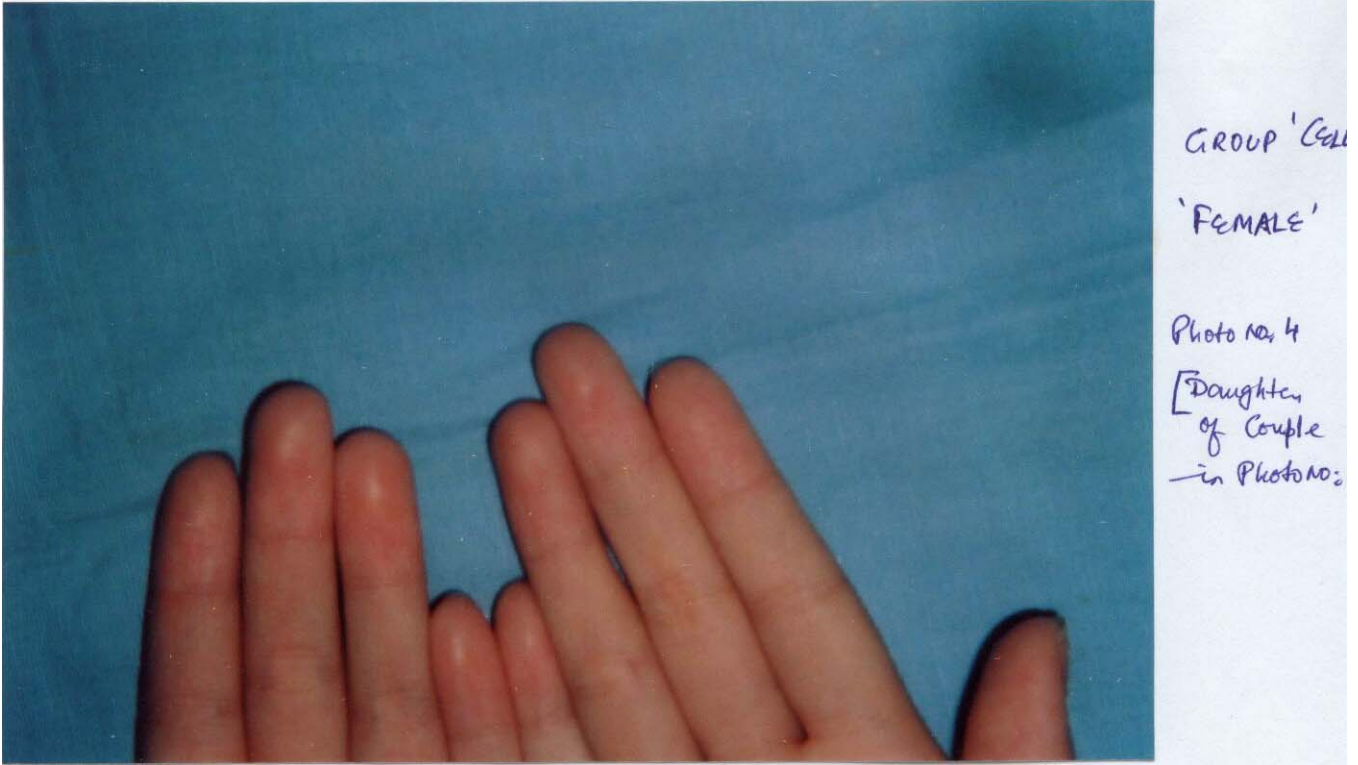


PHOTO NO. 4. GROUP C FEMALE (*having the tip of the little fingers **below** the distal finger mark on the adjacent ring fingers in both their outstretched hands*)

## Discussion

People in Group C (*born with the tip of the little fingers below the distal finger mark on the adjacent ring fingers in both their outstretched hands*) are associated with **higher neuroticism scores** and therefore are more anxious, worried, moody, and unstable. They may be more prone to be easily upset in the face of very minor stresses than the persons belonging to the other Group A (*born with the tip of the little fingers above the distal finger mark on the adjacent ring fingers in both their outstretched hands*). This characteristic personality trait in Group C people may hence act as a predisposing factor in the development of affective disorders, neurotic disorders, DSH and substance abuse.

Moreover females belonging to Group C having a **higher psychoticism score** are therefore more prone to be troublesome, uncooperative, hostile, and socially withdrawn than females of Group A who with lower psychoticism score tend to be altruistic, socialized, empathic, and conventional. This characteristic personality in females in Group C may be responsible for social maladjustment problems and its sequelae.

## Conclusion

Further research is required, but we could infer from this study that there is a **genetically predetermined (inborn) physical marker** i.e. whether the tips of the little fingers are above or below the distal finger mark on the adjacent ring fingers in both hands that determines the characteristic personality traits or temperament of a person and their proneness to anxiety and hostility and disharmonious interpersonal relationships. Further studies can be undertaken in the study of the common genes which determines both the 4<sup>th</sup> and 5<sup>th</sup> finger lengths ratio and the human personality.

This study suggests further research in terms of predicting hostile/criminal behaviours.

## Future research scopes:

- To study the Personality traits in persons having a combination of finger patterns of Group A and C in both



- their hands and to know which hand's finger length (4D&5D) pattern is dominant.
- To determine the gene/s controlling both the finger lengths(4D5D) pattern and personality traits.

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