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FINGER DERMATOGLYPHICS IN THE VIETNAMESE

ABSTRACT. — *Finger prints of 96 Vietnamese (72 men and 24 women) were analysed. In males whorls were found to be of higher frequencies than loops (in females vice versa). The values of the three principal indices were as follows: index of pattern intensity — males 16.06, females 14.23; Dankmeijer's index — males 2.97, females 3.16; Furuhashi's index — males 105.42, females 82.37. The DTRC was found to be in males 158.1 ± 5.50 ridges, in females 140.5 ± 9.5 ridges.*

Neither bimanual difference nor the bisexual variations were noted.

The dermatoglyphic configurations of the Vietnamese as expressed in the Galton patterns and the three principal indices fall within the range of Malaya's ethnic or national groups populating Vietnam, Cambodia, Thailand and Laos.

The Vietnamese represent one of the most numerous Mongoloid groups populating the easternmost part of Indo-China. From the linguistic as well as from the ethnical point of view they are not homogeneous, thus forming a mosaic of groups not related to each other which, according to Nguyen Ding Cat (1975) belong to three linguistic groups the Chinese-Tibetan, the Austro-Asian and the Malayan-Polynesian.

According to accessible literary sources the first reports on the dermatoglyphics of the Vietnamese were published by Mutrux Bornoz (1932, 1937) and Nguyen Hu'u Thuyet (1938). Both authors quite independently draw the attention to an actual "focus of finger whorls" found on the Malayan Peninsula. Further data on the Vietnamese, but also on their neighbours only confirmed the preceding findings by Bornoz and Nguyen. Thus, Jungwirth (1959) described the finger prints of 62 Vietnamese, 46 of them coming from Tonkin (North Vietnam) and 16 from Annam (South Vietnam). Shortly afterwards Nguyen Dinh Xuah (1963) published a hitherto most extensive post-war study on the dermatoglyphics of the inhabitants of Vietnam. They belonged to the Khas, Mois Rhades, and Mois Mong-Kung ethnical groups. Finally, in 1968 Olivier in his

extensive study "L'Anthropologie des Cambodgiens" published also dermatoglyphical data on the Vietnamese coming from Central Annam and Phnom-Penh.

Although all those studies document on the one hand the homogeneity of the Vietnamese, on the other hand they stress some of their population peculiarities which in the future should be studied and explained because the united Vietnam is going now through great social changes which no doubt will have their impact on the biological structure of its inhabitants.

MATERIAL AND METHODS

In the first half of the seventies we succeeded in an anthropological examination of a small group of Vietnamese students who at that time studied at the Brno University (CSSR). On that occasion we made finger and palm prints of 72 males and 24 females. All people examined, whose age varied from 18 to 39 years, were of Vietnamese origin and came from the northern or central parts of the Democratic Republic of Vietnam. We did not obtain further data, particularly data concerning the ethnic origin of the individual persons.

In taking the prints we used the standard ink method and we evaluated the prints for the most part by the methodology of Cummins and Midlo (1961) and Penrose (1968).

RESULTS AND DISCUSSION

The distribution of the four basic finger dermatoglyphic characters (arch, radial loop, ulnar loop, and whorl) on the individual fingers of the right and left hands of 72 men and 24 women are given in Table 1.

From the table it follows that in males whorl occurred most frequently, followed by loops, while in females the opposite was true. Ulnar loops were mostly formed on the small fingers of both hands, whereas radial loops prevailed on the index fingers. Whorls (concentric and spiral, lateral pockets and twin loops) evidently accumulated on the ring finger and on the thumb, followed by the index finger and the middle finger. Arches (simple arch — A and tented arch — TA) were formed on all fingers; they were, however, exceptionally rare.

As for the mutual relations of the above dermatoglyphic figures, expressed by the Cummins index

of pattern intensity, the Dankmeijer index, and the Furuhashi index, they are stated below.

	Index of pattern intensity	Dankmeijer's index	Furuhashi's index
Males	15.06	2.97	105.42
Females	14.23	3.16	82.37

For the comparison of the qualitative data, relatively rich comparative material is available, characterizing the inhabitants of Indo-China and adjacent areas (Table 2). Before confronting the data with ours, we would like to mention the data by Mutrux Borno (1932 and 1937) and by Nguyen Hu'u Thuyet (1938), are not included in our paper for that simple reason that the authors did not take into consideration the bisexual variation in the formation of dermatoglyphic patterns.

The most typical dermatoglyphic pattern of the human finger is generally considered the loop which in some human groups strongly suppresses the whorl formation. That is the case in the Eskimos of

TABLE 1. Digital dermatoglyphic pattern distribution in Vietnamese (72 males and 24 females)

Pattern	Left							Right						
	I	II	III	IV	V	Total	(%)	I	II	III	IV	V	Total	(%)
Males	Ulnar loop	30	28	43	22	53	176 (49.0)	18	26	48	23	40	155 (43.3)	
	Radial loop		5			5	(1.4)		5	1	2		8 (2.2)	
	Whorl	41	36	29	50	18	174 (48.2)	53	37	22	47	32	191 (52.8)	
	Arch	1	3		1	5	(1.4)	1	4	1			6 (1.7)	
Females	Ulnar loop	11	12	14	8	19	74 (53.8)	10	14	15	3	19	61 (50.8)	
	Radial loop		2		1		3 (2.5)				1		1 (0.8)	
	Whorl	12	9	9	15	5	50 (41.2)	14	9	9	20	5	57 (47.6)	
	Arch	1	1	1			3 (2.5)		1				1 (0.8)	

TABLE 2. Percentage of digital patterns and pattern intensity index in Vietnamese (men) and neighbouring tribal populations (according G. Olivier, 1968; adapted and completed)

	Number tested	Frequency of patterns (in %)			Pattern intensity index	Source
		Loop	Whorl	Arch		
Semangs	33	39.8	60.2	0.0	16.02	Weninger, 1953
Thai Dam	110	44.7	55.3	2.2	15.10	Olivier, 1968
Vietnamese	250	44.8	55.2	1.5	15.12	Olivier, 1968
Laotians	250	45.0	55.0	1.5	15.15	Olivier, 1968
Mois Van-Kieu	930	45.0	55.0	1.7	15.15	Hoang Nhu Tung, 1968
Chinese (Cambodia)	150	45.6	54.4	3.0	14.78	Olivier, 1968
Tonkinois	45	47.6	52.4	1.8	14.88	Jungwirth, 1959
Vietnamese	72	47.9	52.1	1.5	15.06	Present study
Khmers	290	48.4	51.6	1.9	14.77	Olivier, 1968
Khas	108	48.7	51.3	1.3	14.86	Nguyen Dinh Xuah, 1963
Thais	316	49.0	51.0	1.9	14.67	Riche, 1942
Chams	150	50.0	50.0	1.9	14.69	Olivier, 1968
Vietnamese	100	50.6	49.4	2.3	14.48	Nguyen Dinh Xuah, 1963
Mois Van-Kieu	142	50.8	49.2	2.1	14.72	Nguyen Dinh Xuah, 1963
Mois	114	52.6	47.4	0.9	14.31	Nguyen Dinh Xuah, 1963
Mois Mong Kong	106	58.3	41.7	1.6	13.93	Nguyen Dinh Xuah, 1963
Javanese	1000	61.3	38.7	2.7	13.31	Dankmeijer, 1938

TABLE 3. Mean digital ridge-counts in Vietnamese

Digit	Left				Right			
	Males		Females		Males		Females	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
I	17.6	5.68	16.2	6.49	19.5	6.20	13.7	6.57
II	14.2	5.45	14.1	6.11	15.9	5.87	12.1	5.01
III	14.5	4.90	13.6	6.25	13.9	6.09	16.9	4.82
IV	17.6	5.31	15.6	5.01	16.9	4.74	16.5	4.82
V	14.1	4.19	13.0	5.01	14.9	5.63	13.7	5.26

Mean total digital ridge-count (DTRC): Mean 150.1 SD = 46.35
Females 140.5 SD = 45.52

Greenland (Abel, 1933), in the inhabitants of the Pacific islands, Malayan Semangs (Weninger, 1953), but also in some further ethnic groups inhabiting Indo-China. And it was the data by Borno and Thuyet that first informed us of the fact that both whorls and loops were typical of the Vietnamese, while arches were rare, as is the case in all Asians.

From the comparison of our data with equivalent data by Jungwirth (1959), Nguyen Dinh Xuah (1963) and Olivier (1968) an interesting conclusion could be drawn: although from the ethnic and linguistic point of view the Vietnamese represent a really heterogeneous population, from the dactyloscopic standpoint they are relatively homogeneous (differences between the sets compared are altogether insignificant).

The quantitative expression of the digital ridge-counts of the left and right hands as well as the total ridge count are presented in Table 3.

A high number of ridges on all fingers with a hint of the right-lateral prevalence and bisexual difference in favor of the males is evident in our set.

If quantitative data do not show different trends in the future (see Table 4), it can be stated that the whorl or the loop are the most typical patterns of Vietnam, but also of the neighbouring countries, of Cambodia, Thailand, and Laos. They occur in an approximately balanced ratio of 1:1. A similar ratio can also be observed in South China and in Korea and Japan (however, not valid for the Ainos!). Towards the south and west loops get more numerous at the cost of whorls, so that in the inha-

bitants of Java this ratio is 1:2, the same as in most Europeans and some black Africans, which in quantitative data is reflected "... in a progressive increase in ridge counts from Africa and Europe through West Asia to East Asia and the Pacific." (Jantz, 1977).

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TABLE 4. Mean total ridge-count and standard deviation within the geographic regions (according A. Leguebe and St. Vrydagh, 1980)

Group	N of samples	TRC	SD
America	26	138.2	20.45
Africa	50	127.5	7.92
Europe	60	141.3	7.38
West Asia	48	142.7	10.17
East Asia	21	141.7	10.11
Pacific	26	164.4	8.50
Eskimo	5	165.8	30.3
	236 Male samples		