Cephalometric Floating Norms for a Chinese Population Sample

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Objective

The purpose of this study was to describe and analyse cephalometric floating norms to describe the individual skeletal pattern of Chinese people by constructing a harmony box. This harmony box based on cephalometric floating norms may used as a diagnostic tool in orthodontics. By using Chinese cephalometric data, the harmonious relationship between five cephalometric variables can give a prognosis in treatment planning for this population.

Materials and Methodes

139 cephalometric x-ray from Chinese people undergoing a orthodontic treatment at the University of British Columbia, Canada, were landmarked. They were separated into 58 females under 18 years, 18 females over 18, 14 males over 18, and 49 males under 18. Each picture was analysed with 40 landmarks, in which 5 angular measurements (SNA, SNB, N-S-Ba, NL-NSL, ML-NSL) were digitised. By using linear regression analysis, a harmony-box-like form was constructed.

Results

The five variables correlated significantly with each other. A harmony box was constructed by using the linear regression analysis. This harmony scheme was divided into three zones. To be reliant on the facial type, it was separated into prognatic, orthopgnatic and retrognatic. As shown in the constructed harmony box, most of the analysed samples were more prognatic.

Conclusion

The craniofacial pattern with the five correlating variables based on a sample of Chinese cephalometrics were inserted into a harmony-box-like form.

Table 1: Descriptive statistics n=159.

	SNA	SNB	NSBa	NL NSL	ML NSL
Mean	88,2	85,7	123,1	0,2	27,8
SD	4,75	4,71	5,41	4,30	6,15
Min	75	73,2	108,1	-13,7	9,1
Max	101,8	98,6	136,9	11,9	45,1

Table 2: Linear Correlation Coefficients (r) for all measurements n=159.

	SNA	*SNB*	*NSBa*	*NL-NSL*
SNB	0,74**			
NSBa	0,54**	0,64**		
NL-NSL	-0,47**	-0,66**	0,49**	
ML-NSL	-0,41**	-0,55**	0,20*	0,50**

*p< 0,05 **p<0,01

Table 3: Linear regression equations with corresponding r^2 and Standard error of the estimate (SE) n=159.

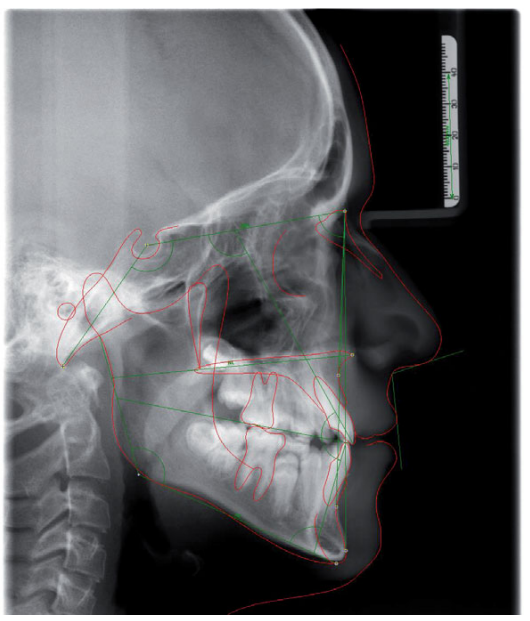
Variables	Regression equations	r^2	SE
NL-NSL	=-0,42SNA+37,5	0,467	3,81
NSBa	=-0,61SNA+177,39	0,504	4,57
ML-NSL	=-0,52SNA+74,08	0,405	5,63
SNB	=0,73SNA+20,93	0,741	3,17
ML NSL	= 0,71SNB+88,95	0,546	5,17
SNA	=-0,47NSBa+146,62	0,54	4,01

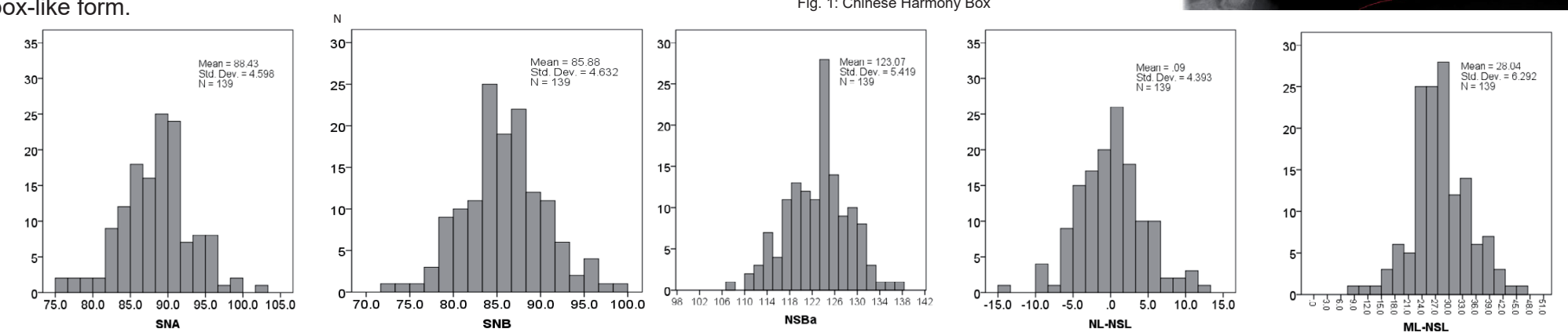
Table 4: standard errors of the estimate when one of the five variables is predicted from the other four by means of a multiple regression analysis of chinese (n=159)

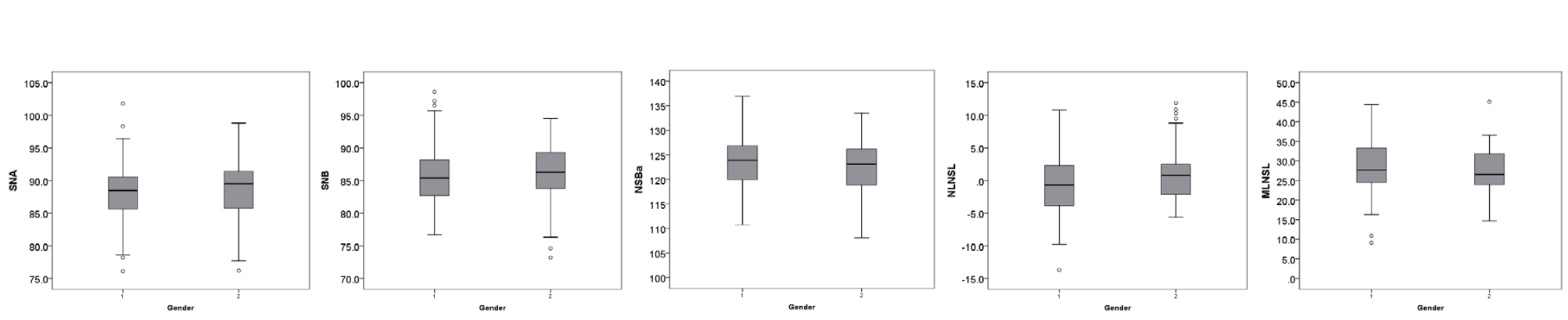
	R	R^2	SE
SNA	0,7473	0,547	3,197
SNB	0,8596	0,739	2,437
ML-NSL	0,6184	0,3664	4,894
NSBa	0,6876	0,4591	3,98
NL-NSL	0,6958	0,4708	3,1288

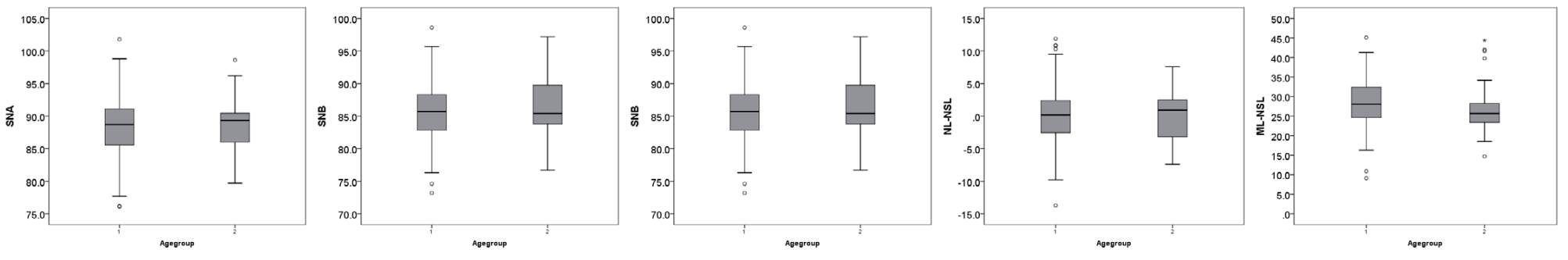
ANB	SNA	NL-NSL	NSBa	ML-NSL	SNB	ML-NL
-4	62	11	140	42	66	30
-4	63	11	139	41	67	30
-4	64	11	138	41	68	30
-3	65	10	138	40	68	30
-3	66	10	137	40	69	30
-3	67	9	137	39	70	30
-3	68	9	136	39	71	30
-2	69	9	135	38	71	30
-2	70	8	135	38	72	30
-2	71	8	134	37	73	29
-1	72	7	133	37	73	29
-1	73	7	133	36	74	29
-1	74	6	132	36	75	29
-1	75	6	132	35	76	29
0	76	6	131	35	76	29
0	77	5	130	34	77	29
0	78	5	130	34	78	29
0	79	4	129	33	79	29
1	80	4	129	32	79	29
1	81	3	128	32	80	28
1	82	3	127	31	81	28
1	83	3	127	31	82	28
2	84	2	126	30	82	28
2	85	2	126	30	83	28
2	86	1	125	29	84	28
3	87	1	124	29	84	28
3	88	1	124	28	85	28
3	89	0	123	28	86	28
3	90	0	122	27	87	28
4	91	-1	122	27	87	27
4	92	-1	121	26	88	27
4	93	-2	121	26	89	27
4	94	-2	120	25	90	27
5	95	-2	119	25	90	27
5	96	-3	119	24	91	27
5	97	-3	118	24	92	27
6	98	-4	118	23	92	27
6	99	-4	117	23	93	27
6	100	-5	116	22	94	27
6	101	-5	116	22	95	26
7	102	-5	115	21	95	26
7	103	-6	115	21	96	26

Fig. 1: Chinese Harmony Box









Key Words: Harmony box, floating norms, cepahlometrics, Chinese population

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