



เอกสารอ้างอิง

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ภาคผนวก ก



ANALYSIS OF VARIANCE TABLE

1. ANS to Anterior Arc by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIFICANCE * OF F
MAIN EFFECTS	92.487	6	15.414	1.977	0.069
AGE	61.767	5	12.353	1.585	0.164
SEX	30.720	1	30.720	3.941	0.048
2-WAY INTERACTIONS	39.520	5	7.904	1.014	0.410
AGE    SEX	39.520	5	7.904	1.014	0.410
RESIDUAL	2245.147	288	7.796		
TOTAL	2377.154	299	7.950		

\* P = .01

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## 2. Pogonion to Anterior Arc by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIFICANCE OF F*
MAIN EFFECTS	174.815	6	29.136	1.907	1.080
AGE	104.248	5	20.850	1.365	0.238
SEX	70.567	1	70.567	4.620	0.032
2-WAY INTERACTIONS	21.808	5	4.362	0.286	0.921
AGE    SEX	21.808	5	4.362	0.286	0.921
RESIDUAL	4399.418	288	15.276		
TOTAL	4596.043	299	15.371		

\* P = .01

## 3. Point B to Basal Arc by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIFICANCE OF F*
MAIN EFFECTS	156.323	6	26.054	3.344	0.003
AGE	69.705	5	13.541	1.789	0.115
SEX	86.618	1	86.618	11.116	0.001
2-WAY INTERACTIONS	26.203	5	5.241	0.673	0.645
AGE    SEX	26.203	5	5.241	0.673	0.645
RESIDUAL	2244.191	288	7.792		
TOTAL	2426.716	299	8.116		

\* P = .01

## 4. Gonion to Posterior Arc by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F *
MAIN EFFECTS	158.990	6	26.498	1.089	0.369
AGE	158.510	5	31.702	1.303	0.263
SEX	0.480	1	0.480	0.020	0.888
2-WAY INTERACTIONS	136.240	5	27.248	1.120	0.350
AGE    SEX	136.240	5	27.248	1.120	0.350
RESIDUAL	7008.293	288	24.334		
TOTAL	7303.523	299	24.426		

\* P = .01

5. l to Anterior Arc by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F *
MAIN EFFECTS	131.245	6	21.874	1.557	0.160
AGE	47.504	5	9.501	0.676	0.642
SEX	83.741	1	83.741	5.960	0.015
2-WAY INTERACTIONS	87.564	5	17.513	1.246	0.287
AGE    SEX	87.564	5	17.513	1.246	0.287
RESIDUAL	4046.675	288	14.051		
TOTAL	4265.484	299	14.266		

\* P = .01

## 6. Total Anterior Facial Height (Sor-Me) by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	4083.886	6	680.647	18.502	0.000
AGE	3594.922	5	718.984	19.544	0.000
SEX	488.963	1	488.963	13.291	0.000
2-WAY INTERACTIONS	1088.067	5	217.613	5.915	0.000
AGE    SEX	1088.068	5	217.614	5.915	0.000
RESIDUAL	10594.945	288	36.788		
TOTAL	15766.898	299	52.732		

\* P = .01

## 7. Upper Ant. Facial Height (Sor-ANS) by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	577.740	6	92.957	9.637	0.000
AGE	478.687	5	95.737	9.926	0.000
SEX	79.053	1	79.053	8.196	0.005
2-WAY INTERACTIONS	127.977	5	25.595	2.654	0.023
AGE    SEX	127.977	5	25.595	2.654	0.023
RESIDUAL	2777.887	288	9.645		
TOTAL	3463.604	299	11.584		

\* P = .01

## 8. Lower Anterior Facial Height by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F *
MAIN EFFECTS	1580.685	6	263.448	15.808	0.000
AGE	1414.029	5	282.806	16.970	0.000
SEX	166.657	1	166.657	10.000	0.002
2-WAY INTERACTIONS	502.253	5	100.451	6.027	0.000
AGE    SEX	502.253	5	100.451	6.027	0.000
RESIDUAL	4799.633	288	16.665		
TOTAL	6882.574	299	23.019		

\* P = .01

## 9. Total Posterior Facial Height (SiGo) by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F *
MAIN EFFECTS	3300.582	6	550.097	13.376	0.000
AGE	2948.498	5	589.699	14.339	0.000
SEX	352.083	1	352.083	8.561	0.004
2-WAY INTERACTIONS	424.737	5	84.947	2.066	0.070
AGE    SEX	424.737	5	84.947	2.066	0.070
RESIDUAL	11843.961	288	41.125		
TOTAL	15569.281	299	52.071		

\* P = .01



## 10. Upper Posterior Facial Height (Si-PNS) by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	578.887	6	96.481	7.013	0.000
AGE	463.567	5	92.713	6.739	0.000
SEX	115.320	1	115.320	8.382	0.004
2-WAY INTERACTIONS	241.130	5	48.226	3.505	0.004
AGE    SEX	241.130	5	48.226	3.505	0.004
RESIDUAL	3962.366	288	13.758		
TOTAL	4782.383	299	15.995		

\* P = .01

## 11. Lower Posterior Facial Height (PNS-Go) by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	1433.249	6	238.875	12.149	0.000
AGE	1245.228	5	249.046	12.666	0.000
SEX	188.021	1	188.021	9.563	0.002
2-WAY INTERACTIONS	164.974	5	32.995	1.678	0.140
AGE    SEX	164.974	5	32.995	1.678	0.140
RESIDUAL	5662.703	288	19.662		
TOTAL	7260.930	299	24.284		

\* P = .01

## 12. Lower Ant. F.H. % Total Ant. F.H. by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	35.488	6	5.915	2.429	0.026
AGE	34.177	5	6.835	2.807	0.017
SEX	1.311	1	1.311	0.538	0.464
2-WAY INTERACTIONS	27.009	5	5.402	2.218	0.053
AGE    SEX	27.009	5	5.402	2.218	0.053
RESIDUAL	701.435	288	2.436		
TOTAL	763.933	299	2.555		

\* P = .01

## 13. Lower Posterior Facial Height % Total Posterior Facial Height by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	374.584	6	62.431	3.061	0.006
AGE	361.888	5	72.378	3.548	0.004
SEX	12.696	1	12.696	0.622	0.431
2-WAY INTERACTIONS	244.375	5	48.875	2.396	0.038
AGE    SEX	244.375	5	48.875	2.396	0.038
RESIDUAL	5874.832	288	20.399		
TOTAL	6493	299	21.718		

\* P = .01

14. Total Posterior Facial Height % Total Anterior Facial Height by  
Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	416.246	6	69.374	5.587	0.000
AGE	334.243	5	66.849	5.384	0.000
SEX	82.003	1	82.003	6.605	0.011
2-WAY INTERACTIONS	40.056	5	8.011	0.645	0.665
AGE    SEX	40.056	5	8.011	0.645	0.665
RESIDUAL	3575.865	288	12.416		
TOTAL	4032.167	299	13.486		

\* P = .01

15. Na-Pog to opic Plane by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	261.485	6	43.581	1.423	0.206
AGE	249.284	5	49.857	1.628	0.153
SEX	12.201	1	12.201	0.398	0.528
2-WAY INTERACTIONS	63.464	5	12.693	0.414	0.839
AGE    SEX	63.464	5	12.693	0.414	0.889
RESIDUAL	8822.398	288	30.633		
TOTAL	9147348	299	30.593		

\* P = .01

## 16. S-N-B by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	152.358	6	25.393	1.815	0.096
AGE	76.858	5	15.372	1.098	0.361
SEX	75.501	1	75.501	5.395	0.021
2-WAY INTERACTIONS	69.164	5	13.833	0.989	0.425
AGE    SEX	69.164	5	13.833	0.989	0.425
RESIDUAL	4030.208	288	13.994		
TOTAL	4251.730	299	14.220		

\* P = .01

## 17. S-N-A by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	73.050	6	12.175	0.929	0.474
AGE	44.837	5	8.967	0.684	0.636
SEX	28.213	1	28.213	2.153	0.143
2-WAY INTERACTIONS	44.607	5	8.921	0.681	0.638
AGE    SEX	44.607	5	8.921	0.681	0.638
RESIDUAL	3774.726	288	13.107		
TOTAL	3892.383	299	13.018		

\* P = .01

## 18. Na-A-Pog by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	335.940	6	55.990	1.979	0.069
AGE	333.687	5	66.737	2.359	0.040
SEX	2.253	1	2.253	0.080	0.778
RESIDUAL	8289.254	293	28.291		
TOTAL	8625.195	299	28.847		

\* P = .01

## 19. ANS-Na-Pog by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	95.675	6	15.946	2.140	0.049
AGE	92.968	5	18.594	2.495	0.081
SEX	2.707	1	2.707	0.363	0.547
2-WAY INTERACTIONS	6.688	5	1.388	0.179	0.970
AGE   SEX	6.688	5	1.338	0.179	0.970
RESIDUAL	2146.172	288	7.452		
TOTAL	2248.534	299	7.520		

\* P = .01

20.  $\bar{I}$  to Optic Plane by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	176.435	6	29.406	0.531	0.785
AGE	141.414	5	28.283	0.511	0.768
SEX	35.021	1	35.021	0.632	0.427
2-WAY INTERACTIONS	93.574	5	18.715	0.338	0.890
AGE    SEX	93.574	5	18.715	0.338	0.890
RESIDUAL	15953.434	288	55.394		
TOTAL	16223.445	299	54.259		

\* P = .01

21.  $\bar{I}$  to Pog by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	173.410	6	28.902	6.585	0.000
AGE	118.797	5	23.759	5.414	0.000
SEX	54.613	1	54.613	12.444	0.000
2-WAY INTERACTIONS	63.647	5	12.729	2.900	0.014
AGE    SEX	63.647	5	12.729	2.900	0.014
RESIDUAL	1263.950	288	4.389		
TOTAL	1501.007	299	5.020		

\* P = .01

22.  $\bar{1}$  to Na-Pog by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	40.123	6	6.687	0.715	0.638
AGE	21.120	5	5.544	0.593	0.705
SEX	12.403	1	12.403	1.326	0.250
2-WAY INTERACTIONS	14.857	5	2.971	0.318	0.902
AGE    SEX	14.857	5	2.971	0.318	0.902
RESIDUAL	2693.267	288	9.352		
TOTAL	2748.248	299	9.191		

\* P = .01

## 23. S-Go % Na-Me by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	249.598	6	41.600	2.605	0.018
AGE	222.143	5	44.429	2.782	0.018
SEX	27.455	1	27.455	1.719	0.191
2-WAY INTERACTIONS	124.280	5	24.856	1.556	0.172
AGE    SEX	124.280	5	24.856	1.556	0.172
RESIDUAL	4599.477	288	15.970		
TOTAL	4973.355	299	16.633		

\* P = .01

## 24. ANS-Me % Na-Me by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	41.832	6	6.972	1.323	0.247
AGE	23.997	5	4.799	0.911	0.474
SEX	17.835	1	17.835	3.385	0.067
2-WAY INTERACTIONS	27.208	5	5.442	1.033	0.399
AGE    SEX	27.208	5	5.442	1.033	0.399
RESIDUAL	1517.639	288	5.270		
TOTAL	1586.679	299	5.307		

\* P = .01

## 25. Polato Mandibular Angle by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	224.262	6	37.377	1.643	0.135
AGE	190.594	5	38.119	1.675	0.141
SEX	33.667	1	33.667	1.480	0.225
2-WAY INTERACTIONS	157.868	5	31.574	1.388	0.229
AGE    SEX	157.868	5	31.574	1.388	0.229
RESIDUAL	6553.512	288	22.755		
TOTAL	6935.645	299	23.196		

\* P = .01



## 26. Facial Angle (Na-Pog to FH) by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	93.330	6	15.555	1.567	0.157
AGE	74.077	5	14.815	1.492	0.192
SEX	19.253	1	19.253	1.939	0.165
2-WAY INTERACTIONS	46.737	5	9.347	0.942	0.454
AGE    SEX	46.737	5	9.347	0.942	0.434
RESIDUAL	2859.086	288	9.927		
TOTAL	2999.153	299	10.031		

\* P = .01

## 27. Angle of Convexity (Na-A-Pog) by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	314.367	6	52.394	1.829	0.093
AGE	311.937	5	62.387	2.178	0.057
SEX	2.430	1	2.430	0.085	0.771
2-WAY INTERACTIONS	52.810	5	10.562	0.369	0.870
AGE    SEX	52.810	5	10.562	0.369	0.870
RESIDUAL	8251.055	288	28.649		
TOTAL	8618.234	299	28.824		

\* P = .01

## 28. AB Plane to Facial Plane by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	99.520	6	16.587	1.593	0.149
AGE	71.307	5	14.261	1.369	0.236
SEX	28.213	1	28.213	2.709	0.101
2-WAY INTERACTIONS	10.517	5	2.103	0.202	0.916
AGE    SEX	10.517	5	2.103	0.202	0.961
RESIDUAL	2999.229	288	10.414		
TOTAL	3109.266	299	10.399		

\* P = .01

## 29. Mandibular Plane to Frankfort Horizontal Plane by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	123.705	6	20.617	0.609	0.723
AGE	122.564	5	24.513	0.724	0.606
SEX	1.141	1	1.141	0.034	0.855
2-WAY INTERACTIONS	377.164	5	75.433	2.227	0.032
AGE    SEX	377.165	5	75.433	2.227	0.052
RESIDUAL	9754.988	288	33.871		
TOTAL	10255.859	299	34.301		

\* P = .01

## 30. Y-Axis (S-Gn to Frankfort Horizontal Plane) by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	45.280	6	7.547	0.614	0.719
AGE	41.427	5	8.285	0.674	0.643
SEX	3.853	1	3.853	0.313	0.576
2-WAY INTERACTIONS	76.387	5	15.277	1.243	0.289
AGE    SEX	76.387	5	15.277	1.243	0.289
RESIDUAL	3540.486	288	12.293		
TOTAL	3662.153	299	12.248		

\* P = .01

## 31. Cant of Occlusal Plane by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	147.128	6	24.521	2.190	0.044
AGE	146.608	5	29.322	2.619	0.025
SEX	0.521	1	0.521	0.047	0.329
2-WAY INTERACTIONS	51.214	5	10.243	0.915	0.472
AGE    SEX	51.214	5	10.243	0.915	0.472
RESIDUAL	3224.689	288	11.197		
TOTAL	3423.031	299	11.448		

\* P = .01

32. Interincisal Angle ( $\bar{l}$  to  $\bar{l}$  Angle) by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	1070.140	6	178.357	1.861	0.087
AGE	1031.977	5	206.395	2.153	0.059
SEX	38.163	1	38.163	0.398	0.529
2-WAY INTERACTIONS	139.607	5	27.921	0.291	0.918
AGE    SEX	139.607	5	27.921	0.291	0.918
RESIDUAL	27604.441	288	95.849		
TOTAL	28814.191	299	96.369		

\* P = .01

33.  $\bar{l}$  to Mandibular Plane by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	344.590	6	57.432	1.360	0.231
AGE	300.507	5	60.101	1.423	0.216
SEX	44.083	1	44.083	1.044	0.308
2-WAY INTERACTIONS	198.297	5	39.659	0.939	0.436
AGE    SEX	198.297	5	39.659	0.929	0.436
RESIDUAL	12164.355	288	42.237		
TOTAL	12707.242	299	42.499		

\* P = .01

34.  $\bar{1}$  to Occlusal Plane by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	247.337	6	41.223	1.071	0.380
AGE	245.417	5	49.083	1.275	0.275
SEX	1.920	1	1.920	0.050	0.823
2-WAY INTERACTIONS	114.580	5	22.916	0.595	0.704
AGE    SEX	114.580	5	22.916	0.595	0.704
RESIDUAL	11089.438	288	38.505		
TOTAL	11451.355	299	38.299		

\* P = .01

35.  $\underline{1}$  to A-Pog by Age, Sex

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARES	F	SIGNIFICANCE OF F*
MAIN EFFECTS	37.120	6	6.287	1.094	0.366
AGE	30.357	5	6.071	1.056	0.385
SEX	7.363	1	7.363	1.281	0.259
RESIDUAL	1683.998	293	5.747		
TOTAL	1721.718	299	5.758		

\* P = .01

### ประวัติผู้เขียน

นายสมศักดิ์ เจ็งประภากร เกิดเมื่อวันที่ 18 สิงหาคม พ.ศ. 2497 ที่กรุงเทพมหานคร สำเร็จการศึกษาทันตแพทยศาสตรบัณฑิต จากคณะทันตแพทยศาสตร์ มหาวิทยาลัยมหิดล พ.ศ. 2521 ได้เข้าศึกษาต่อในสาขาวิชาทันตกรรมจัดฟัน ภาควิชาทันตกรรมจัดฟัน บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย ในปี พ.ศ. 2522



ศูนย์วิทยะพยากร  
จุฬาลงกรณ์มหาวิทยาลัย