

Mixed Model Analysis

Model Dimension^a

		Number of Levels	Covariance Structure	Number of Parameters
Fixed Effects	Intercept	1		1
	SNR	3		2
	Program	6		5
	SNR * Program	18		10
Random Effects	Audiogram	4	Variance Components	1
Residual				1
Total		32		20

a. Dependent Variable: HASQL.

Information Criteria^a

-2 Restricted Log Likelihood	-1160.299967
Akaike's Information Criterion (AIC)	-1156.299967
Hurvich and Tsai's Criterion (AICC)	-1156.278346
Bozdogan's Criterion (CAIC)	-1145.651249
Schwarz's Bayesian Criterion (BIC)	-1147.651249

The information criteria are displayed in smaller-is-better form.

a. Dependent Variable: HASQL.

Coefficients of Determination

Pseudo-R Square Measures	Marginal	.526
	Conditional	.706

Intraclass Correlation Coefficients

Overall ICCs	Adjusted	.379
	Conditional	.180

Fixed Effects

Type III Tests of Fixed Effects^a

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	3.000	42.020	.007
SNR	2	555.000	407.109	<.001
Program	5	555.000	40.574	<.001
SNR * Program	10	555.000	.982	.458

a. Dependent Variable: HASQL.

Covariance Parameters

Estimates of Covariance Parameters^a

Parameter	Estimate	Std. Error
Residual	.006	.000
Audiogram Variance	.004	.003

a. Dependent Variable: HASQL.

Estimated Marginal Means

1. Grand Mean^a

Mean	Std. Error	df	95% Confidence Interval	
			Lower Bound	Upper Bound
.204	.031	3.000	.104	.304

a. Dependent Variable: HASQL.

2. SNR

Estimates^a

SNR	Mean	Std. Error	df	95% Confidence Interval	
				Lower Bound	Upper Bound
-5	.092	.032	3.136	-.007	.191
0	.195	.032	3.136	.096	.294
5	.324	.032	3.136	.225	.423

a. Dependent Variable: HASQL.

Pairwise Comparisons^a

(I) SNR	(J) SNR	Mean Difference (I-J)	Std. Error	df	Sig. ^c	95% Confidence Interval for Difference ^c	
						Lower Bound	Upper Bound
-5	0	-.103 [*]	.008	555.000	<.001	-.123	-.084
	5	-.232 [*]	.008	555.000	<.001	-.252	-.213
0	-5	.103 [*]	.008	555.000	<.001	.084	.123
	5	-.129 [*]	.008	555.000	<.001	-.149	-.109
5	-5	.232 [*]	.008	555.000	<.001	.213	.252
	0	.129 [*]	.008	555.000	<.001	.109	.149

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

a. Dependent Variable: HASQI.

c. Adjustment for multiple comparisons: Bonferroni.

Univariate Tests^a

Numerator df	Denominator df	F	Sig.
2	555.000	407.109	<.001

The F tests the effect of SNR. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Dependent Variable: HASQI.

3. Program

Estimates^a

Program	Mean	Std. Error	df	95% Confidence Interval	
				Lower Bound	Upper Bound
No Processing	.148	.032	3.346	.051	.245
Beam	.196	.032	3.346	.099	.293
Beam + NoiseBlock	.209	.032	3.346	.112	.306
DNN	.217	.032	3.346	.120	.314
NoiseBlock	.159	.032	3.346	.062	.256
Beam + DNN	.294	.032	3.346	.197	.391

a. Dependent Variable: HASQI.

Pairwise Comparisons^a

(I) Program	(J) Program	Mean Difference (I-J)	Std. Error	df	Sig. ^c
No Processing	Beam	-.048 [*]	.012	555.000	<.001
	Beam + NoiseBlock	-.061 [*]	.012	555.000	<.001
	DNN	-.069 [*]	.012	555.000	<.001
	NoiseBlock	-.011	.012	555.000	1.000
	Beam + DNN	-.146 [*]	.012	555.000	<.001
Beam	No Processing	.048 [*]	.012	555.000	<.001
	Beam + NoiseBlock	-.013	.012	555.000	1.000
	DNN	-.021	.012	555.000	1.000
	NoiseBlock	.038 [*]	.012	555.000	.018
	Beam + DNN	-.098 [*]	.012	555.000	<.001
Beam + NoiseBlock	No Processing	.061 [*]	.012	555.000	<.001
	Beam	.013	.012	555.000	1.000
	DNN	-.008	.012	555.000	1.000
	NoiseBlock	.051 [*]	.012	555.000	<.001
	Beam + DNN	-.085 [*]	.012	555.000	<.001
DNN	No Processing	.069 [*]	.012	555.000	<.001
	Beam	.021	.012	555.000	1.000
	Beam + NoiseBlock	.008	.012	555.000	1.000
	NoiseBlock	.059 [*]	.012	555.000	<.001
	Beam + DNN	-.077 [*]	.012	555.000	<.001
NoiseBlock	No Processing	.011	.012	555.000	1.000
	Beam	-.038 [*]	.012	555.000	.018
	Beam + NoiseBlock	-.051 [*]	.012	555.000	<.001
	DNN	-.059 [*]	.012	555.000	<.001
	Beam + DNN	-.135 [*]	.012	555.000	<.001
Beam + DNN	No Processing	.146 [*]	.012	555.000	<.001
	Beam	.098 [*]	.012	555.000	<.001
	Beam + NoiseBlock	.085 [*]	.012	555.000	<.001
	DNN	.077 [*]	.012	555.000	<.001
	NoiseBlock	.135 [*]	.012	555.000	<.001

Pairwise Comparisons^a

(I) Program	(J) Program	95% Confidence Interval for Difference ^c	
		Lower Bound	Upper Bound
No Processing	Beam	-.082	-.014
	Beam + NoiseBlock	-.095	-.027
	DNN	-.103	-.035
	NoiseBlock	-.045	.023
	Beam + DNN	-.180	-.112
Beam	No Processing	.014	.082
	Beam + NoiseBlock	-.047	.021
	DNN	-.055	.013
	NoiseBlock	.004	.072
	Beam + DNN	-.132	-.064
Beam + NoiseBlock	No Processing	.027	.095
	Beam	-.021	.047
	DNN	-.042	.026
	NoiseBlock	.017	.085
	Beam + DNN	-.119	-.051
DNN	No Processing	.035	.103
	Beam	-.013	.055
	Beam + NoiseBlock	-.026	.042
	NoiseBlock	.025	.093
	Beam + DNN	-.111	-.043
NoiseBlock	No Processing	-.023	.045
	Beam	-.072	-.004
	Beam + NoiseBlock	-.085	-.017
	DNN	-.093	-.025
	Beam + DNN	-.169	-.101
Beam + DNN	No Processing	.112	.180
	Beam	.064	.132
	Beam + NoiseBlock	.051	.119
	DNN	.043	.111
	NoiseBlock	.101	.169

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

a. Dependent Variable: HASQI.

c. Adjustment for multiple comparisons: Bonferroni.

Univariate Tests^a

Numerator df	Denominator df	F	Sig.
5	555.000	40.574	<.001

The F tests the effect of Program. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Dependent Variable: HASQI.

4. SNR * Program

Estimates^a

SNR	Program	Mean	Std. Error	df	95% Confidence Interval	
					Lower Bound	Upper Bound
-5	No Processing	.052	.034	4.254	-.041	.145
	Beam	.091	.034	4.254	-.002	.184
	Beam + NoiseBlock	.098	.034	4.254	.005	.191
	DNN	.095	.034	4.254	.002	.188
	NoiseBlock	.058	.034	4.254	-.035	.151
	Beam + DNN	.157	.034	4.254	.064	.250
0	No Processing	.133	.034	4.254	.040	.226
	Beam	.188	.034	4.254	.095	.281
	Beam + NoiseBlock	.203	.034	4.254	.110	.296
	DNN	.205	.034	4.254	.112	.298
	NoiseBlock	.144	.034	4.254	.051	.237
	Beam + DNN	.297	.034	4.254	.204	.390
5	No Processing	.258	.034	4.254	.165	.351
	Beam	.309	.034	4.254	.216	.402
	Beam + NoiseBlock	.326	.034	4.254	.233	.419
	DNN	.351	.034	4.254	.258	.444
	NoiseBlock	.273	.034	4.254	.180	.367
	Beam + DNN	.427	.034	4.254	.334	.520

a. Dependent Variable: HASQI.

Pairwise Comparisons^a

SNR	(I) Program	(J) Program	Mean Difference (I-J)	Std. Error	df	Sig. ^c
-5	No Processing	Beam	-.039	.020	555.000	.795
		Beam + NoiseBlock	-.046	.020	555.000	.345
		DNN	-.043	.020	555.000	.483
		NoiseBlock	-.006	.020	555.000	1.000
		Beam + DNN	-.104 [*]	.020	555.000	<.001
	Beam	No Processing	.039	.020	555.000	.795
		Beam + NoiseBlock	-.007	.020	555.000	1.000
		DNN	-.004	.020	555.000	1.000
		NoiseBlock	.033	.020	555.000	1.000
		Beam + DNN	-.066 [*]	.020	555.000	.016
	Beam + NoiseBlock	No Processing	.046	.020	555.000	.345
		Beam	.007	.020	555.000	1.000
		DNN	.003	.020	555.000	1.000
		NoiseBlock	.040	.020	555.000	.710
		Beam + DNN	-.059	.020	555.000	.051
	DNN	No Processing	.043	.020	555.000	.483
		Beam	.004	.020	555.000	1.000
		Beam + NoiseBlock	-.003	.020	555.000	1.000
		NoiseBlock	.037	.020	555.000	.962
		Beam + DNN	-.061 [*]	.020	555.000	.033
	NoiseBlock	No Processing	.006	.020	555.000	1.000
		Beam	-.033	.020	555.000	1.000
		Beam + NoiseBlock	-.040	.020	555.000	.710
		DNN	-.037	.020	555.000	.962
		Beam + DNN	-.098 [*]	.020	555.000	<.001
	Beam + DNN	No Processing	.104 [*]	.020	555.000	<.001
		Beam	.066 [*]	.020	555.000	.016
		Beam + NoiseBlock	.059	.020	555.000	.051
		DNN	.061 [*]	.020	555.000	.033
		NoiseBlock	.098 [*]	.020	555.000	<.001
0	No Processing	Beam	-.055	.020	555.000	.089
		Beam + NoiseBlock	-.070 [*]	.020	555.000	.008
		DNN	-.072 [*]	.020	555.000	.005
		NoiseBlock	-.011	.020	555.000	1.000
		Beam + DNN	-.164 [*]	.020	555.000	<.001

Pairwise Comparisons^a

SNR	(I) Program	(J) Program	95% Confidence Interval for Difference ^c	
			Lower Bound	Upper Bound
-5	No Processing	Beam	-.098	.020
		Beam + NoiseBlock	-.104	.013
		DNN	-.102	.016
		NoiseBlock	-.065	.053
		Beam + DNN	-.163	-.045
	Beam	No Processing	-.020	.098
		Beam + NoiseBlock	-.066	.052
		DNN	-.063	.055
		NoiseBlock	-.026	.092
		Beam + DNN	-.124	-.007
	Beam + NoiseBlock	No Processing	-.013	.104
		Beam	-.052	.066
		DNN	-.056	.062
		NoiseBlock	-.019	.099
		Beam + DNN	-.118	.000
	DNN	No Processing	-.016	.102
		Beam	-.055	.063
		Beam + NoiseBlock	-.062	.056
		NoiseBlock	-.022	.096
		Beam + DNN	-.120	-.002
	NoiseBlock	No Processing	-.053	.065
		Beam	-.092	.026
		Beam + NoiseBlock	-.099	.019
		DNN	-.096	.022
		Beam + DNN	-.157	-.040
	Beam + DNN	No Processing	.045	.163
		Beam	.007	.124
		Beam + NoiseBlock	.000	.118
		DNN	.002	.120
		NoiseBlock	.040	.157
0	No Processing	Beam	-.114	.004
		Beam + NoiseBlock	-.129	-.011
		DNN	-.131	-.013
		NoiseBlock	-.070	.048
		Beam + DNN	-.223	-.105

Pairwise Comparisons^a

SNR	(I) Program	(J) Program	Mean Difference (I-J)	Std. Error	df	Sig. ^c
	Beam	No Processing	.055	.020	555.000	.089
		Beam + NoiseBlock	-.015	.020	555.000	1.000
		DNN	-.017	.020	555.000	1.000
		NoiseBlock	.044	.020	555.000	.402
		Beam + DNN	-.109 [*]	.020	555.000	<.001
	Beam + NoiseBlock	No Processing	.070 [*]	.020	555.000	.008
		Beam	.015	.020	555.000	1.000
		DNN	-.002	.020	555.000	1.000
		NoiseBlock	.059 [*]	.020	555.000	.049
		Beam + DNN	-.094 [*]	.020	555.000	<.001
	DNN	No Processing	.072 [*]	.020	555.000	.005
		Beam	.017	.020	555.000	1.000
		Beam + NoiseBlock	.002	.020	555.000	1.000
		NoiseBlock	.061 [*]	.020	555.000	.034
		Beam + DNN	-.092 [*]	.020	555.000	<.001
	NoiseBlock	No Processing	.011	.020	555.000	1.000
		Beam	-.044	.020	555.000	.402
		Beam + NoiseBlock	-.059 [*]	.020	555.000	.049
		DNN	-.061 [*]	.020	555.000	.034
		Beam + DNN	-.153 [*]	.020	555.000	<.001
	Beam + DNN	No Processing	.164 [*]	.020	555.000	<.001
		Beam	.109 [*]	.020	555.000	<.001
		Beam + NoiseBlock	.094 [*]	.020	555.000	<.001
		DNN	.092 [*]	.020	555.000	<.001
		NoiseBlock	.153 [*]	.020	555.000	<.001
5	No Processing	Beam	-.050	.020	555.000	.181
		Beam + NoiseBlock	-.068 [*]	.020	555.000	.011
		DNN	-.092 [*]	.020	555.000	<.001
		NoiseBlock	-.015	.020	555.000	1.000
		Beam + DNN	-.169 [*]	.020	555.000	<.001
	Beam	No Processing	.050	.020	555.000	.181
		Beam + NoiseBlock	-.018	.020	555.000	1.000
		DNN	-.042	.020	555.000	.538
		NoiseBlock	.035	.020	555.000	1.000
		Beam + DNN	-.119 [*]	.020	555.000	<.001

Pairwise Comparisons^a

SNR	(I) Program	(J) Program	95% Confidence Interval for Difference ^c	
			Lower Bound	Upper Bound
	Beam	No Processing	-.004	.114
		Beam + NoiseBlock	-.074	.044
		DNN	-.076	.042
		NoiseBlock	-.015	.103
		Beam + DNN	-.168	-.050
	Beam + NoiseBlock	No Processing	.011	.129
		Beam	-.044	.074
		DNN	-.061	.057
		NoiseBlock	.000	.118
		Beam + DNN	-.153	-.035
	DNN	No Processing	.013	.131
		Beam	-.042	.076
		Beam + NoiseBlock	-.057	.061
		NoiseBlock	.002	.120
		Beam + DNN	-.151	-.033
	NoiseBlock	No Processing	-.048	.070
		Beam	-.103	.015
		Beam + NoiseBlock	-.118	.000
		DNN	-.120	-.002
		Beam + DNN	-.212	-.094
	Beam + DNN	No Processing	.105	.223
		Beam	.050	.168
		Beam + NoiseBlock	.035	.153
		DNN	.033	.151
		NoiseBlock	.094	.212
5	No Processing	Beam	-.109	.009
		Beam + NoiseBlock	-.127	-.009
		DNN	-.151	-.033
		NoiseBlock	-.074	.044
		Beam + DNN	-.228	-.110
	Beam	No Processing	-.009	.109
		Beam + NoiseBlock	-.077	.041
		DNN	-.101	.017
		NoiseBlock	-.024	.094
		Beam + DNN	-.178	-.060

Pairwise Comparisons^a

SNR	(I) Program	(J) Program	Mean Difference (I-J)	Std. Error	df	Sig. ^c
	Beam + NoiseBlock	No Processing	.068 [*]	.020	555.000	.011
		Beam	.018	.020	555.000	1.000
		DNN	-.024	.020	555.000	1.000
		NoiseBlock	.053	.020	555.000	.126
		Beam + DNN	-.101 [*]	.020	555.000	<.001
	DNN	No Processing	.092 [*]	.020	555.000	<.001
		Beam	.042	.020	555.000	.538
		Beam + NoiseBlock	.024	.020	555.000	1.000
		NoiseBlock	.077 [*]	.020	555.000	.002
		Beam + DNN	-.077 [*]	.020	555.000	.002
	NoiseBlock	No Processing	.015	.020	555.000	1.000
		Beam	-.035	.020	555.000	1.000
		Beam + NoiseBlock	-.053	.020	555.000	.126
		DNN	-.077 [*]	.020	555.000	.002
		Beam + DNN	-.154 [*]	.020	555.000	<.001
	Beam + DNN	No Processing	.169 [*]	.020	555.000	<.001
		Beam	.119 [*]	.020	555.000	<.001
		Beam + NoiseBlock	.101 [*]	.020	555.000	<.001
		DNN	.077 [*]	.020	555.000	.002
		NoiseBlock	.154 [*]	.020	555.000	<.001

Pairwise Comparisons^a

SNR	(I) Program	(J) Program	95% Confidence Interval for Difference ^c	
			Lower Bound	Upper Bound
	Beam + NoiseBlock	No Processing	.009	.127
		Beam	-.041	.077
		DNN	-.083	.034
		NoiseBlock	-.006	.112
		Beam + DNN	-.160	-.042
	DNN	No Processing	.033	.151
		Beam	-.017	.101
		Beam + NoiseBlock	-.034	.083
		NoiseBlock	.018	.136
		Beam + DNN	-.135	-.018
	NoiseBlock	No Processing	-.044	.074
		Beam	-.094	.024
		Beam + NoiseBlock	-.112	.006
		DNN	-.136	-.018
		Beam + DNN	-.213	-.095
	Beam + DNN	No Processing	.110	.228
		Beam	.060	.178
		Beam + NoiseBlock	.042	.160
		DNN	.018	.135
		NoiseBlock	.095	.213

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

a. Dependent Variable: HASQI.

c. Adjustment for multiple comparisons: Bonferroni.

Univariate Tests^a

SNR	Numerator df	Denominator df	F	Sig.
-5	5	555.000	6.955	<.001
0	5	555.000	17.064	<.001
5	5	555.000	18.520	<.001

Each F tests the simple effects of Program within each level combination of the other effects shown. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Dependent Variable: HASQI.