

มหาวิทยาลัยบูรพา
Burapha University

ภาคผนวก

L I S R E L 8.72

BY

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Website: www.ssicentral.comPATH ANALYSIS FOR O-NET MODEL

DA NI=16 NO=477 MA=CM

LA

SLN1 SLN2 SLN3 SLN4 SLN5 SLN6 SLN7 STC8 STC9 SSC10 SSC11 SSC12 SSC13 SSC14 GPA ONET

ME

3.41 3.46 3.37 2.94 2.24 3.17 3.37 3.47 3.08 3.52 3.38 3.37 3.31 3.47 3.06 259.96

SD

.324 .296 .302 .512 .571 .433 .301 .307 .548 .372 .410 .394 .402 .355 .337 23.816

KM FU

1.000	.663	.592	.484	.325	.519	.550	.440	.383	.452	.454	.451	.371	.406	.250	.254
.663	1.000	.669	.419	.367	.516	.618	.466	.408	.574	.526	.515	.443	.489	.237	.317
.592	.669	1.000	.515	.357	.576	.616	.510	.448	.477	.474	.487	.422	.455	.315	.293
.484	.419	.515	1.000	.339	.626	.504	.397	.552	.421	.405	.486	.388	.374	.340	.332
.325	.367	.357	.339	1.000	.351	.348	.322	.290	.370	.347	.378	.343	.332	.278	.444
.519	.516	.576	.626	.351	1.000	.615	.449	.467	.482	.436	.476	.435	.422	.337	.286
.550	.618	.616	.504	.348	.615	1.000	.522	.475	.556	.563	.503	.475	.549	.273	.299
.440	.466	.510	.397	.322	.449	.522	1.000	.541	.524	.486	.470	.442	.485	.234	.324
.383	.408	.448	.552	.290	.467	.475	.541	1.000	.468	.433	.520	.417	.378	.280	.287
.452	.574	.477	.421	.370	.482	.556	.524	.468	1.000	.763	.665	.612	.648	.281	.316
.454	.526	.474	.405	.347	.436	.563	.486	.433	.763	1.000	.654	.643	.692	.267	.325
.451	.515	.487	.486	.378	.476	.503	.470	.520	.665	.654	1.000	.667	.534	.281	.416
.371	.443	.422	.388	.343	.435	.475	.442	.417	.612	.643	.667	1.000	.530	.292	.396
.406	.489	.455	.374	.332	.422	.549	.485	.378	.648	.692	.534	.530	1.000	.234	.332
.250	.237	.315	.340	.278	.337	.273	.234	.280	.281	.267	.281	.292	.234	1.000	.201
.254	.317	.293	.332	.444	.286	.299	.324	.287	.316	.325	.416	.396	.332	.201	1.000

SE

8 9 1 2 3 4 5 6 7 15 16 10 11 12 13 14

MO NX=5 NY=11 NK=1 NE=4 LX=FU LY=FU GA=FU BE=SD TE=SY TD=SY PS=SY PH=SY

VA 1.00 LY 10 3 LY 11 4

VA 0.00 TE 11 11 TE 10 10

PA LX

1
1
1
1
1
1

PA LY

1 0 0 0
 1 0 0 0
 0 1 0 0
 0 1 0 0
 0 1 0 0
 0 1 0 0
 0 1 0 0
 0 1 0 0
 0 1 0 0
 0 0 0 0
 0 0 0 0

PA GA

1
 1
 0
 1

PA BE

0 0 0 0
 1 0 0 0
 1 1 0 0
 1 1 1 0

PA TE

1
 0 1
 1 0 1
 1 1 1 1
 1 1 1 1 1
 1 1 1 1 1 1
 0 0 0 1 0 0 1
 0 1 1 1 1 1 1 1
 0 0 0 1 1 1 1 1 1
 0 1 1 1 0 0 0 0 1 0
 1 0 0 1 0 1 1 0 0 0 0

PA TD

1
 1 1
 0 0 1
 1 1 1 1
 0 1 1 1 1

PA PS

1
 0 1
 0 0 1
 0 0 0 1

PA PH

1

LK
'SCHOOL'

LE
'TEACHER' 'LEARNER' 'GPA' 'O-NET'

PD
OU ME=ML RS FS EF MI SC SS AD=Off IT=1000 ND=3

Number of Input Variables 16
Number of Y - Variables 11
Number of X - Variables 5
Number of ETA - Variables 4
Number of KSI - Variables 1
Number of Observations 477

!PATH ANALYSIS FOR O-NET MODEL

Covariance Matrix

	STC8	STC9	SLN1	SLN2	SLN3	SLN4
STC8	0.094					
STC9	0.091	0.300				
SLN1	0.044	0.068	0.105			
SLN2	0.042	0.066	0.064	0.088		
SLN3	0.047	0.074	0.058	0.060	0.091	
SLN4	0.062	0.155	0.080	0.064	0.080	0.262
SLN5	0.056	0.091	0.060	0.062	0.062	0.099
SLN6	0.060	0.111	0.073	0.066	0.075	0.139
SLN7	0.048	0.078	0.054	0.055	0.056	0.078
GPA	0.024	0.052	0.027	0.024	0.032	0.059
ONET	2.369	3.746	1.960	2.235	2.107	4.048
SSC10	0.060	0.095	0.054	0.063	0.054	0.080
SSC11	0.061	0.097	0.060	0.064	0.059	0.085
SSC12	0.057	0.112	0.058	0.060	0.058	0.098
SSC13	0.055	0.092	0.048	0.053	0.051	0.080
SSC14	0.053	0.074	0.047	0.051	0.049	0.068

Covariance Matrix (continued)

	SLN5	SLN6	SLN7	GPA	ONET	SSC10
SLN5	0.326					
SLN6	0.087	0.187				
SLN7	0.060	0.080	0.091			
GPA	0.053	0.049	0.028	0.114		
ONET	6.038	2.949	2.143	1.613	567.202	
SSC10	0.079	0.078	0.062	0.035	2.800	0.138
SSC11	0.081	0.077	0.069	0.037	3.173	0.116
SSC12	0.085	0.081	0.060	0.037	3.904	0.097
SSC13	0.079	0.076	0.057	0.040	3.791	0.092
SSC14	0.067	0.065	0.059	0.028	2.807	0.086

Covariance Matrix (continued)

	SSC11	SSC12	SSC13	SSC14
SSC11	0.168			
SSC12	0.106	0.155		
SSC13	0.106	0.106	0.162	
SSC14	0.101	0.075	0.076	0.126

!PATH ANALYSIS FOR O-NET MODEL

Number of Iterations = 44

LISREL Estimates (Maximum Likelihood)

LAMBDA-Y

	TEACHER	LEARNER	GPA	O-NET
STC8	0.234	-	-	-
STC9	0.387	-	-	-
	(0.029)			
	13.495			
SLN1	-	0.214	-	-
SLN2	-	0.233	-	-
		(0.016)		
		14.940		
SLN3	-	(0.016)	-	-
		13.751		
SLN4	-	0.338	-	-
		(0.028)		
		12.024		
SLN5	-	0.299	-	-
		(0.031)		
		9.689		
SLN6	-	0.306	-	-
		(0.024)		
		12.600		
SLN7	-	0.247	-	-
		(0.019)		
		13.321		
GPA	-	-	-	-
ONET	-	-	-	-

LAMBDA-X

	SCHOOL
SSC10	0.310 (0.015) 21.277
SSC11	0.329 (0.017) 19.815
SSC12	0.319 (0.016) 20.181
SSC13	0.296 (0.018) 16.129
SSC14	0.273 (0.015) 18.439

BETA

	TEACHER	LEARNER	GPA	O-NET
TEACHER	--	--	--	--
LEARNER	0.484 (0.107) 4.518	--	--	--
GPA	-0.098 (0.061) -1.597	0.242 (0.061) 3.987	--	--
O-NET	3.715 (4.251) 0.874	-0.676 (3.851) -0.175	2.452 (3.963) 0.619	--

GAMMA

	SCHOOL
TEACHER	0.803 (0.056) 14.285
LEARNER	0.426 (0.093) 4.558
GPA	--
O-NET	7.915 (2.722) 2.908

Covariance Matrix of ETA and KSI

	TEACHER	LEARNER	GPA	O-NET	SCHOOL
TEACHER	1.000				
LEARNER	0.826	1.000			
GPA	0.101	0.161	0.114		
O-NET	9.760	9.234	1.481	566.005	
SCHOOL	0.803	0.815	0.118	10.636	1.000

PHI

SCHOOL
1.000

PSI

Note: This matrix is diagonal.

TEACHER	LEARNER	GPA	O-NET
0.355	0.253	0.085	448.173
(0.067)	(0.051)	(0.008)	(30.394)
5.301	4.978	11.114	14.746

Squared Multiple Correlations for Structural Equations

TEACHER	LEARNER	GPA	O-NET
0.645	0.747	0.254	0.208

Squared Multiple Correlations for Reduced Form

TEACHER	LEARNER	GPA	O-NET
0.645	0.664	0.123	0.200

Reduced Form

	SCHOOL
TEACHER	0.803 (0.056) 14.285
LEARNER	0.815 (0.064) 12.651
GPA	0.118 (0.015) 8.106
O-NET	10.636 (1.084) 9.810

THETA-EPS

	STC8	STC9	SLN1	SLN2	SLN3	SLN4
STC8	0.039 (0.004) 9.643					
STC9	-	0.151 (0.013) 11.511				
SLN1	0.002 (0.003) 0.754	-	0.059 (0.005) 12.948			
SLN2	-0.003 (0.003) -1.117	-0.008 (0.004) -1.803	0.013 (0.003) 4.037	0.033 (0.004) 7.405		
SLN3	0.005 (0.003) 1.990	0.006 (0.005) 1.213	0.012 (0.003) 3.797	0.010 (0.003) 2.787	0.046 (0.004) 10.839	
SLN4	-0.003 (0.004) -0.645	0.048 (0.009) 5.190	0.008 (0.005) 1.527	-0.015 (0.006) -2.648	0.007 (0.005) 1.308	0.148 (0.013) 11.437
SLN5	-	-	-	0.023 (0.005) -1.262	-	-
SLN6	-	0.013 (0.007) 2.047	0.007 (0.004) 1.657	-0.005 (0.005) -1.065	0.010 (0.005) 2.165	0.007 (0.008) 4.164
SLN7	- (0.003) -0.943	- (0.003) 0.932	- (0.005) -0.983	-	-	-
GPA	-	0.011 (0.007) 1.644	-0.007 (0.004) -1.778	-0.013 (0.003) -3.744	-	-
ONET	0.093 (0.287) 0.325	-	-	0.063 (0.194) 0.326	(0.367) 2.410	

THETA-EPS (continued)

	SLN5	SLN6	SLN7	GPA	ONET
SLN5	0.236 (0.017) 14.112				
SLN6	-0.004 (0.007) -0.580	0.094 (0.009) 10.508			
SLN7	-0.012 (0.005) -2.423	0.005 (0.005) 1.041	0.030 (0.004) 7.814		
GPA	- - -	- - -	-0.011 (0.003) -3.347		
ONET	3.160 (0.530) 5.964	-	-	-	-

Squared Multiple Correlations for Y - Variables

STC8	STC9	SLN1	SLN2	SLN3	SLN4
0.583	0.498	0.437	0.622	0.500	0.437

Squared Multiple Correlations for Y - Variables (continued)

SLN5	SLN6	SLN7	GPA	ONET
0.275	0.498	0.673	1.000	1.000

THETA-DELTA

	SSC10	SSC11	SSC12	SSC13	SSC14
SSC10	0.043 (0.004) 10.692				
SSC11	0.014 (0.004) 4.023	0.060 (0.006) 10.779			
SSC12	-	-	0.053 (0.005) 10.760		
SSC13	0.000 (0.004) 0.052	0.008 (0.005) 1.789	0.011 (0.005) 2.398	0.074 (0.007) 10.059	
SSC14	-	0.011 (0.003) 3.024	-0.013 (0.003) -3.817	-0.005 (0.004) -1.244	0.008 (0.005) 11.145

Squared Multiple Correlations for X - Variables

SSC10	SSC11	SSC12	SSC13	SSC14
0.692	0.646	0.656	0.542	0.593

Goodness of Fit Statistics

Degrees of Freedom = 57

Minimum Fit Function Chi-Square = 76.198 (P = 0.0456)

Normal Theory Weighted Least Squares Chi-Square = 75.379 (P = 0.0520)

Estimated Non-centrality Parameter (NCP) = 18.379

90 Percent Confidence Interval for NCP = (0.0 ; 45.025)

Minimum Fit Function Value = 0.160

Population Discrepancy Function Value (F0) = 0.0386

90 Percent Confidence Interval for F0 = (0.0 ; 0.0946)

Root Mean Square Error of Approximation (RMSEA) = 0.0260

90 Percent Confidence Interval for RMSEA = (0.0 ; 0.0407)

P-Value for Test of Close Fit (RMSEA < 0.05) = 0.998

Expected Cross-Validation Index (ECVI) = 0.490

90 Percent Confidence Interval for ECVI = (0.452 ; 0.546)

ECVI for Saturated Model = 0.571

ECVI for Independence Model = 24.933

Chi-Square for Independence Model with 120 Degrees of Freedom = 11836.209

Independence AIC = 11868.209

Model AIC = 233.379

Saturated AIC = 272.000

Independence CAIC = 11950.890

Model CAIC = 641.613

Saturated CAIC = 974.782

Normed Fit Index (NFI) = 0.994

Non-Normed Fit Index (NNFI) = 0.997

Parsimony Normed Fit Index (PNFI) = 0.472

Comparative Fit Index (CFI) = 0.998

Incremental Fit Index (IFI) = 0.998

Relative Fit Index (RFI) = 0.986

Critical N (CN) = 530.321

Root Mean Square Residual (RMR) = 0.137

Standardized RMR = 0.0184

Goodness of Fit Index (GFI) = 0.981

Adjusted Goodness of Fit Index (AGFI) = 0.954

Parsimony Goodness of Fit Index (PGFI) = 0.411

Fitted Covariance Matrix

	STC8	STC9	SLN1	SLN2	SLN3	SLN4
STC8	0.094					
STC9	0.091	0.300				
SLN1	0.044	0.068	0.105			
SLN2	0.042	0.066	0.063	0.087		
SLN3	0.047	0.074	0.058	0.059	0.091	
SLN4	0.063	0.156	0.081	0.064	0.079	0.262
SLN5	0.058	0.096	0.064	0.063	0.064	0.101
SLN6	0.059	0.111	0.073	0.066	0.075	0.139
SLN7	0.048	0.079	0.053	0.055	0.055	0.078
GPA	0.024	0.051	0.028	0.025	0.034	0.054
ONET	2.379	3.777	1.977	2.215	1.972	4.010
SSC10	0.058	0.096	0.054	0.059	0.054	0.085
SSC11	0.062	0.102	0.057	0.063	0.057	0.091
SSC12	0.060	0.099	0.056	0.061	0.056	0.088
SSC13	0.056	0.092	0.052	0.056	0.052	0.082
SSC14	0.051	0.085	0.048	0.052	0.048	0.075

Fitted Covariance Matrix (continued)

	SLN5	SLN6	SLN7	GPA	ONET	SSC10
SLN5	0.325					
SLN6	0.087	0.188				
SLN7	0.061	0.060	0.090			
GPA	0.048	0.049	0.028	0.114		
ONET	5.922	2.821	2.278	1.481	566.005	
SSC10	0.075	0.077	0.062	0.037	3.292	0.138
SSC11	0.080	0.082	0.066	0.039	3.504	0.116
SSC12	0.078	0.079	0.064	0.038	3.395	0.099
SSC13	0.072	0.074	0.059	0.035	3.148	0.092
SSC14	0.067	0.068	0.055	0.032	2.908	0.085

Fitted Covariance Matrix (continued)

	SSC11	SSC12	SSC13	SSC14
SSC11	0.168			
SSC12	0.105	0.155		
SSC13	0.106	0.106	0.162	
SSC14	0.101	0.075	0.076	0.126

Fitted Residuals

	STC8	STC9	SLN1	SLN2	SLN3	SLN4
STC8	0.000					
STC9	0.000	0.000				
SLN1	0.000	0.000	0.000			
SLN2	0.000	0.000	0.000	0.000		
SLN3	0.001	0.000	0.000	0.000	0.000	
SLN4	0.000	-0.001	0.000	-0.001	0.000	0.000
SLN5	-0.001	-0.005	-0.004	-0.001	-0.002	-0.002
SLN6	0.001	0.000	0.000	0.000	0.000	0.000
SLN7	0.000	-0.001	0.001	0.000	0.001	-0.001
GPA	0.000	0.001	-0.001	-0.001	-0.002	0.004
ONET	-0.010	-0.031	-0.017	0.020	0.135	0.038
SSC10	0.002	-0.001	0.000	0.004	0.000	-0.005
SSC11	-0.001	-0.005	0.003	0.001	0.001	-0.006
SSC12	-0.003	0.013	0.002	-0.001	0.002	0.010
SSC13	-0.001	0.000	-0.003	-0.003	0.000	-0.002
SSC14	-0.001	-0.011	-0.001	-0.001	0.001	-0.007

Fitted Residuals (continued)

	SLN5	SLN6	SLN7	GPA	ONET	SSC10
SLN5	0.001					
SLN6	0.000	0.000				
SLN7	-0.002	0.000	0.000			
GPA	0.005	0.000	-0.001	0.000		
ONET	0.116	0.128	-0.135	0.132	1.197	
SSC10	0.003	0.001	0.000	-0.001	-0.492	0.000
SSC11	0.001	-0.005	0.003	-0.002	-0.330	0.000
SSC12	0.007	0.002	-0.004	0.000	0.509	-0.001
SSC13	0.007	0.002	-0.002	0.005	0.643	0.000
SSC14	0.001	-0.003	0.004	-0.004	-0.101	0.001

Fitted Residuals (continued)

	SSC11	SSC12	SSC13	SSC14
SSC11	0.000			
SSC12	0.001	0.000		
SSC13	0.000	0.000	0.000	
SSC14	0.000	0.000	0.000	0.000

Standardized Residuals (continued)

	SLN5	SLN6	SLN7	GPA	ONET	SSC10
SLN5	1.048					
SLN6	-0.188	-0.106				
SLN7	-1.364	0.127	1.359			
GPA	0.935	0.043	-1.457	0.280		
ONET	1.237	0.502	-1.168	1.453	0.650	
SSC10	0.603	0.206	0.030	-0.416	-2.931	--
SSC11	0.162	-1.300	1.600	-0.543	-1.612	0.669
SSC12	1.241	0.522	-2.238	-0.102	2.610	-1.048
SSC13	1.014	0.537	-0.940	1.168	2.760	-1.021
SSC14	0.124	-0.947	1.867	-1.267	-0.513	0.797

Standardized Residuals (continued)

	SSC11	SSC12	SSC13	SSC14
SSC11	0.669			
SSC12	0.370	--		
SSC13	0.321	0.605	0.600	
SSC14	0.162	0.626	--	-0.626

Summary Statistics for Standardized Residuals

Smallest Standardized Residual	-2.931
Median Standardized Residual	0.133
Largest Standardized Residual	3.079

Stemleaf Plot

```

- 2|97
- 2|2
- 1|866555
- 1|44333211000
- 0|9959877666555
- 0|4444333333222222111111100000000
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0|555566666677777788889999
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1|55569
2|4
2|678
3|1

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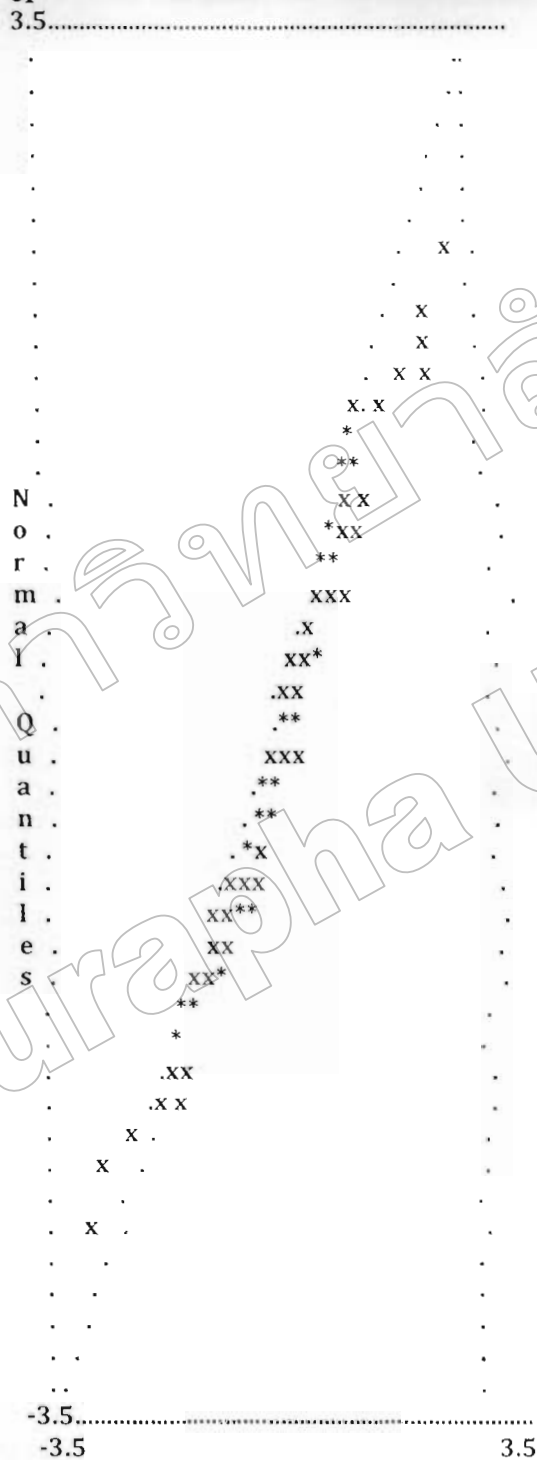
Largest Negative Standardized Residuals

Residual for	SSC10	and	ONET	-2.931
Residual for	SSC14	and	STC9	-2.698

Largest Positive Standardized Residuals

Residual for	SSC10	and	SLN2	2.713
Residual for	SSC12	and	STC9	3.079
Residual for	SSC12	and	ONET	2.610
Residual for	SSC13	and	ONET	2.760

Qplot of Standardized Residuals



Modification Indices and Expected Change

Modification Indices for LAMBDA-Y

	TEACHER	LEARNER	GPA	O-NET
STC8	--	0.363	0.708	0.216
STC9	--	0.363	0.363	0.043
SLN1	0.008	--	0.002	0.008
SLN2	--	--	--	--
SLN3	1.841	--	1.097	0.736
SLN4	0.915	--	1.071	0.478
SLN5	0.105	--	0.761	0.978
SLN6	0.031	--	0.007	0.240
SLN7	0.048	--	0.081	1.267
GPA	--	--	--	0.578
ONET	--	--	--	--

Expected Change for LAMBDA-Y

	TEACHER	LEARNER	GPA	O-NET
STC8	--	0.045	0.066	-0.003
STC9	--	-0.075	-0.310	0.002
SLN1	-0.005	--	0.027	0.000
SLN2	--	--	--	--
SLN3	0.077	--	-0.043	0.000
SLN4	-0.095	--	0.067	-0.005
SLN5	-0.023	--	0.074	0.007
SLN6	0.010	--	-0.004	0.000
SLN7	-0.011	--	-0.141	-0.001
GPA	--	--	--	-0.004
ONET	--	--	--	--

Standardized Expected Change for LAMBDA-Y

	TEACHER	LEARNER	GPA	O-NET
STC8	--	0.045	0.022	-0.081
STC9	--	-0.075	-0.105	0.058
SLN1	-0.005	--	0.009	-0.001
SLN2	--	--	--	--
SLN3	0.077	--	-0.014	0.009
SLN4	-0.095	--	0.023	-0.116
SLN5	-0.023	--	0.025	0.166
SLN6	0.010	--	-0.002	0.008
SLN7	-0.011	--	-0.047	-0.013
GPA	--	--	--	-0.104
ONET	--	--	--	--

Completely Standardized Expected Change for LAMBDA-Y

	TEACHER	LEARNER	GPA	O-NET
STC8	--	0.148	0.073	-0.265
STC9	--	-0.137	-0.191	0.106
SLN1	-0.016	--	0.028	-0.003
SLN2	--	--	--	--
SLN3	0.256	--	-0.048	0.030
SLN4	-0.186	--	0.044	-0.226
SLN5	-0.040	--	0.044	0.291
SLN6	0.024	--	-0.003	0.019
SLN7	-0.037	--	-0.157	-0.044
GPA	--	--	--	-0.309
ONET	--	--	--	--

No Non-Zero Modification Indices for LAMBDA-X

Modification Indices for BETA

	TEACHER	LEARNER	GPA	O-NET
TEACHER	--	--	0.578	0.578
LEARNER	--	--	0.578	0.578
GPA	--	--	--	0.578
O-NET	--	--	--	--

Expected Change for BETA

	TEACHER	LEARNER	GPA	O-NET
TEACHER	--	--	0.181	0.074
LEARNER	--	--	0.243	0.099
GPA	--	--	--	-0.004
O-NET	--	--	--	--

Standardized Expected Change for BETA

	TEACHER	LEARNER	GPA	O-NET
TEACHER	--	--	0.537	0.003
LEARNER	--	--	0.721	0.004
GPA	--	--	--	-0.001
O-NET	--	--	--	--

Modification Indices for GAMMA

	SCHOOL
TEACHER	--
LEARNER	--
GPA	0.578
O-NET	--

Expected Change for GAMMA

	SCHOOL
TEACHER	--
LEARNER	--
GPA	-0.035
O-NET	--

Standardized Expected Change for GAMMA

	SCHOOL
TEACHER	--
LEARNER	--
GPA	-0.103
O-NET	--

No Non-Zero Modification Indices for PHI

Modification Indices for PSI

	TEACHER	LEARNER	GPA	O-NET
TEACHER	--			
LEARNER	--	--		
GPA	0.578	0.578	--	
O-NET	--	--	--	--

Expected Change for PSI

	TEACHER	LEARNER	GPA	O-NET
TEACHER	--			
LEARNER	--	--		
GPA	0.015	0.021	--	
O-NET	--	--	--	--

Standardized Expected Change for PSI

	TEACHER	LEARNER	GPA	O-NET
TEACHER	--			
LEARNER	--	--		
GPA	0.046	0.061	--	
O-NET	--	--	--	--

Modification Indices for THETA-EPS

	STC8	STC9	SLN1	SLN2	SLN3	SLN4
STC8	--					
STC9	0.578	--				
SLN1	--	0.001	--			
SLN2	--	--	--	--		
SLN3	--	--	--	--	--	
SLN4	--	--	--	--	--	--
SLN5	0.043	0.283	0.304		0.345	0.008
SLN6	0.006	--			--	--
SLN7	0.095	0.011	0.380	--	--	--
GPA	0.578	--	--	--	1.086	1.066
ONET	--	--	0.007	--	0.561	--

Modification Indices for THETA-EPS (continued)

	SLN5	SLN6	SLN7	GPA	ONET
SLN5	--				
SLN6	--	--			
SLN7	--	--	--		
GPA	0.789	0.009	--	--	
ONET	--	0.242	1.162	--	--

Expected Change for THETA-EPS

	STC8	STC9	SLN1	SLN2	SLN3	SLN4
STC8	--					
STC9	0.022	--				
SLN1	--	0.000	--			
SLN2	--	--	--	--		
SLN3	--	--	--	--	--	
SLN4	--	--	--	--	--	--
SLN5	-0.001	-0.005	-0.003	--	-0.003	-0.001
SLN6	0.000	--	--	--	--	--
SLN7	0.001	-0.001	0.003	--	--	--
GPA	0.006	--	--	--	-0.004	0.006
ONET	--	--	-0.020	--	0.154	--

Expected Change for THETA-EPS (continued)

	SLN5	SLN6	SLN7	GPA	ONET
SLN5	--				
SLN6	--	--			
SLN7	--	--	--		
GPA	0.007	0.000	--	--	
ONET	--	0.155	-0.243	--	--

Completely Standardized Expected Change for THETA-EPS

	STC8	STC9	SLN1	SLN2	SLN3	SLN4
STC8	--					
STC9	0.132	--				
SLN1	--	-0.001	--			
SLN2	--	--	--	--		
SLN3	--	--	--	--	--	
SLN4	--	--	--	--	--	--
SLN5	-0.007	-0.017	-0.017	--	-0.018	-0.003
SLN6	0.002	--	--	--	--	--
SLN7	0.009	-0.003	0.028	--	--	--
GPA	0.054	--	--	--	-0.038	0.035
ONET	--	--	-0.003	--	0.021	--

Completely Standardized Expected Change for THETA-EPS (continued)

	SLN5	SLN6	SLN7	GPA	ONET
SLN5	--				
SLN6	--	--			
SLN7	--	--	--		
GPA	0.035	-0.003	--	--	
ONET	--	0.015	-0.034	--	--

Modification Indices for THETA-DELTA-EPS

	STC8	STC9	SLN1	SLN2	SLN3	SLN4
SSC10	1.890	0.003	1.272	8.621	2.869	0.409
SSC11	0.432	0.076	2.009	0.567	0.109	0.012
SSC12	4.675	6.975	0.633	0.470	1.381	2.406
SSC13	0.017	0.184	0.693	1.094	0.007	0.926
SSC14	0.772	3.922	0.227	1.050	0.646	0.085

Modification Indices for THETA-DELTA-EPS (continued)

	SLN5	SLN6	SLN7	GPA	ONET
SSC10	0.850	1.241	0.630	0.022	7.287
SSC11	0.008	2.998	3.047	0.009	0.997
SSC12	0.008	0.065	5.575	1.106	3.652
SSC13	0.000	1.607	0.052	1.885	5.411
SSC14	0.012	0.124	2.502	0.928	0.169

Expected Change for THETA-DELTA-EPS

	STC8	STC9	SLN1	SLN2	SLN3	SLN4
SSC10	0.003	0.000	-0.003	0.006	-0.003	-0.002
SSC11	-0.002	-0.001	0.003	-0.001	0.001	0.000
SSC12	-0.006	0.013	0.002	-0.002	0.003	0.007
SSC13	0.000	-0.002	-0.002	-0.003	0.000	-0.004
SSC14	0.002	-0.009	-0.001	-0.002	0.002	-0.001

Expected Change for THETA-DELTA-EPS (continued)

	SLN5	SLN6	SLN7	GPA	ONET
SSC10	0.004	0.003	-0.002	0.000	-0.563
SSC11	0.000	-0.005	0.004	0.000	-0.216
SSC12	0.001	-0.001	-0.006	-0.004	0.477
SSC13	0.000	0.005	-0.001	0.005	0.613
SSC14	0.001	-0.001	0.004	-0.003	0.098

Completely Standardized Expected Change for THETA-DELTA-EPS

	STC8	STC9	SLN1	SLN2	SLN3	SLN4
SSC10	0.028	0.001	-0.021	0.051	-0.030	-0.012
SSC11	-0.013	-0.005	0.025	-0.012	0.006	-0.002
SSC12	-0.050	0.059	0.017	-0.013	0.023	0.033
SSC13	0.003	-0.010	-0.018	-0.021	0.002	-0.021
SSC14	0.021	-0.047	-0.011	-0.021	0.017	-0.007

Completely Standardized Expected Change for THETA-DELTA-EPS (continued)

	SLN5	SLN6	SLN7	GPA	ONET
SSC10	0.021	0.020	-0.014	0.004	-0.064
SSC11	-0.002	-0.030	0.030	-0.002	-0.022
SSC12	0.002	-0.005	-0.048	-0.029	0.051
SSC13	0.000	0.027	-0.005	0.040	0.064
SSC14	0.003	-0.008	0.034	-0.028	0.012

Modification Indices for THETA-DELTA

	SSC10	SSC11	SSC12	SSC13	SSC14
SSC10	--				
SSC11	--	--			
SSC12	1.064	0.391	--		
SSC13	--	--	--	--	
SSC14	0.447	--	--	--	--

Expected Change for THETA-DELTA

	SSC10	SSC11	SSC12	SSC13	SSC14
SSC10	--				
SSC11	--	--			
SSC12	-0.004	0.003	--		
SSC13	--	--	--	--	
SSC14	0.003	--	--	--	--

Completely Standardized Expected Change for THETA-DELTA

	SSC10	SSC11	SSC12	SSC13	SSC14
SSC10	--				
SSC11	--	--			
SSC12	-0.025	0.016	--		
SSC13	--	--	--	--	
SSC14	0.023	--	--	--	--

Maximum Modification Index is 8.62 for Element (1, 4) of THETA
DELTA-EPSILON

Factor Scores Regressions

ETA

	STC8	STC9	SLN1	SLN2	SLN3	SLN4
TEACHER	1.116	0.481	-0.020	0.592	-0.177	0.008
LEARNER	0.331	0.012	0.029	1.027	-0.050	0.288
GPA	0.009	-0.076	0.000	0.268	-0.168	0.026
O-NET	-1.772	2.318	3.888	-1.557	4.007	-6.645

ETA (continued)

	SLN5	SLN6	SLN7	GPA	ONET	SSC10
TEACHER	0.071	0.085	0.389	-0.028	0.001	0.176
LEARNER	0.204	0.151	1.016	0.463	-0.002	0.111
GPA	-0.010	-0.058	0.233	1.019	0.000	-0.028
O-NET	-13.562	3.926	1.121	2.031	1.113	0.752

ETA (continued)

	SSC11	SSC12	SSC13	SSC14
TEACHER	0.063	0.189	0.086	0.187
LEARNER	0.040	0.120	0.055	0.119
GPA	-0.010	-0.030	-0.014	-0.030
O-NET	0.268	0.810	0.369	0.802

KSI

	STC8	STC9	SLN1	SLN2	SLN3	SLN4
SCHOOL	0.180	0.063	0.008	0.219	-0.022	0.033

KSI (continued)

	SLN5	SLN6	SLN7	GPA	ONET	SSC10
SCHOOL	0.018	0.039	0.197	0.064	0.002	0.603

KSI (continued)

	SSC11	SSC12	SSC13	SSC14
SCHOOL	0.215	0.649	0.296	0.642

Standardized Solution

LAMBDA-Y

	TEACHER	LEARNER	GPA	O-NET
STC8	0.234	--	--	--
STC9	0.387	--	--	--
SLN1	--	0.214	--	--
SLN2	--	0.233	--	--
SLN3	--	0.214	--	--
SLN4	--	0.338	--	--
SLN5	--	0.299	--	--
SLN6	--	0.306	--	--
SLN7	--	0.247	--	--
GPA	--	--	0.337	--
ONET	--	--	--	23.791

LAMBDA-X

	SCHOOL
SSC10	0.310
SSC11	0.329
SSC12	0.319
SSC13	0.296
SSC14	0.273

BETA

	TEACHER	LEARNER	GPA	O-NET
TEACHER	--	--	--	--
LEARNER	0.484	--	--	--
GPA	-0.291	0.717	--	--
O-NET	0.156	-0.028	0.035	--

GAMMA

	SCHOOL
TEACHER	0.803
LEARNER	0.426
GPA	--
O-NET	0.333

Correlation Matrix of ETA and KSI

	TEACHER	LEARNER	GPA	O-NET	SCHOOL
TEACHER	1.000				
LEARNER	0.826	1.000			
GPA	0.301	0.476	1.000		
O-NET	0.410	0.388	0.185	1.000	
SCHOOL	0.803	0.815	0.350	0.447	1.000

PSI

Note: This matrix is diagonal.

TEACHER	LEARNER	GPA	O-NET
0.355	0.253	0.746	0.792

Regression Matrix ETA on KSI (Standardized)

	SCHOOL
TEACHER	0.803
LEARNER	0.815
GPA	0.350
O-NET	0.447

Completely Standardized Solution

LAMBDA-Y

	TEACHER	LEARNER	GPA	O-NET
STC8	0.764	--	--	--
STC9	0.706	--	--	--
SLN1	--	0.661	--	--
SLN2	--	0.789	--	--
SLN3	--	0.707	--	--
SLN4	--	0.661	--	--
SLN5	--	0.524	--	--
SLN6	--	0.706	--	--
SLN7	--	0.820	--	--
GPA	--	--	1.000	--
ONET	--	--	--	1.000

LAMBDA-X

	SCHOOL
SSC10	0.832
SSC11	0.804
SSC12	0.810
SSC13	0.736
SSC14	0.770

BETA

	TEACHER	LEARNER	GPA	O-NET
TEACHER	--	--	--	--
LEARNER	0.484	--	--	--
GPA	-0.291	0.717	--	--
O-NET	0.156	-0.028	0.035	--

GAMMA

	SCHOOL
TEACHER	0.803
LEARNER	0.426
GPA	--
O-NET	0.333

Correlation Matrix of ETA and KSI

	TEACHER	LEARNER	GPA	O-NET	SCHOOL
TEACHER	1.000				
LEARNER	0.826	1.000			
GPA	0.301	0.476	1.000		
O-NET	0.410	0.388	0.185	1.000	
SCHOOL	0.803	0.815	0.350	0.447	1.000

PSI

Note: This matrix is diagonal.

TEACHER	LEARNER	GPA	O-NET
0.355	0.253	0.746	0.792

THETA-EPS

	STC8	STC9	SLN1	SLN2	SLN3	SLN4
STC8	0.417					
STC9	--	0.502				
SLN1	0.021	--	0.563			
SLN2	-0.033	-0.050	0.141	0.378		
SLN3	0.056	0.034	0.122	0.108	0.500	
SLN4	-0.018	0.169	0.050	-0.097	0.046	0.563
SLN5	--	--	--	-0.037	--	--
SLN6	--	0.057	0.052	-0.040	0.076	0.159
SLN7	--	--	--	-0.032	0.030	-0.033
GPA	--	0.062	-0.060	-0.126	--	--
ONET	0.013	--	--	0.009	--	0.073

THETA-EPS (continued)

	SLN5	SLN6	SLN7	GPA	ONET
SLN5	0.725				
SLN6	-0.017	0.502			
SLN7	-0.072	0.036	0.327		
GPA	--	--	-0.110	--	
ONET	0.233	--	--	--	--

THETA-DELTA

	SSC10	SSC11	SSC12	SSC13	SSC14
SSC10	0.308				
SSC11	0.094	0.354			
SSC12	--	--	0.344		
SSC13	0.001	0.051	0.070	0.458	
SSC14	--	0.073	-0.091	-0.037	0.407

Regression Matrix ETA on KSI (Standardized)

	SCHOOL
TEACHER	0.803
LEARNER	0.815
GPA	0.350
O-NET	0.447

Total and Indirect Effects

Total Effects of KSI on ETA

	SCHOOL
TEACHER	0.803 (0.056) 14.285
LEARNER	0.815 (0.064) 12.651
GPA	0.118 (0.015) 8.106
O-NET	10.636 (1.084) 9.810

Indirect Effects of KSI on ETA

	SCHOOL
TEACHER	--
LEARNER	0.389 (0.087) 4.470
GPA	0.118 (0.015) 8.106
O-NET	2.722 (2.404) 1.132

Total Effects of ETA on ETA

	TEACHER	LEARNER	GPA	O-NET
TEACHER	--	--	--	--
LEARNER	0.484 (0.107)	-	-	-
	4.518			
GPA	0.019 (0.034)	0.242 (0.061)	-	-
	0.554	3.987		
O-NET	3.434 (3.185)	-0.083 (3.282)	2.452 (3.963)	-
	1.078	-0.025	0.619	

Largest Eigenvalue of B^*B' (Stability Index) is 20.442

Indirect Effects of ETA on ETA

	TEACHER	LEARNER	GPA	O-NET
TEACHER	--	--	--	--
LEARNER	-	-	-	-
GPA	0.117 (0.044)	-	-	-
	2.636			
O-NET	-0.281 (1.832)	0.592 (0.997)	-	-
	-0.153	0.594		

Total Effects of ETA on Y

	TEACHER	LEARNER	GPA	O-NET
STC8	0.234	--	--	--
STC9	0.387 (0.029)	-	-	-
	13.495			
SLN1	0.104 (0.023)	0.214	-	-
	4.518			
SLN2	0.113 (0.025)	0.233 (0.016)	-	-
	4.533	14.940		
SLN3	0.103 (0.023)	0.214 (0.016)	-	-
	4.558	13.751		
SLN4	0.164 (0.037)	0.338 (0.028)	-	-
	4.448	12.024		
SLN5	0.145 (0.033)	0.299 (0.031)	-	-
	4.402	9.689		

SLN6	0.148 (0.032)	0.306 (0.024)	-	-
	4.601	12.600		
SLN7	0.119 (0.026)	0.247 (0.019)	-	-
	4.680	13.321		
GPA	0.019 (0.034)	0.242 (0.061)	1.000	-
	0.554	3.987		
ONET	3.434 (3.185)	-0.083 (3.282)	2.452 (3.963)	1.000
	1.078	-0.025	0.619	

Indirect Effects of ETA on Y

	TEACHER	LEARNER	GPA	O-NET
STC8	---	--	--	--
STC9	-	-	-	-
SLN1	0.104 (0.023)	-	-	-
	4.518			
SLN2	0.113 (0.025)	-	-	-
	4.533			
SLN3	0.103 (0.023)	-	-	-
	4.558			
SLN4	0.164 (0.037)	-	-	-
	4.448			
SLN5	0.145 (0.033)	-	-	-
	4.402			
SLN6	0.148 (0.032)	-	-	-
	4.601			
SLN7	0.119 (0.026)	-	-	-
	4.680			
GPA	0.019 (0.034)	0.242 (0.061)	-	-
	0.554	3.987		
ONET	3.434 (3.185)	-0.083 (3.282)	2.452 (3.963)	-
	1.078	-0.025	0.619	

Total Effects of KSI on Y

	SCHOOL
STC8	0.188 (0.013) 14.285
STC9	0.311 (0.024) 13.141
SLN1	0.174 (0.014) 12.651
SLN2	0.190 (0.013) 15.113
SLN3	0.174 (0.013) 13.423
SLN4	0.276 (0.022) 12.520
SLN5	0.244 (0.024) 10.256
SLN6	0.249 (0.019) 13.439
SLN7	0.201 (0.012) 16.098
GPA	0.118 (0.015) 8.106
ONET	10.636 (1.084) 9.810

Standardized Total and Indirect Effects

Standardized Total Effects of KSI on ETA

	SCHOOL
TEACHER	0.803
LEARNER	0.815
GPA	0.350
O-NET	0.447

Standardized Indirect Effects of KSI on ETA SCHOOL

TEACHER	--
LEARNER	0.389
GPA	0.350
O-NET	0.114

Standardized Total Effects of ETA on ETA

	TEACHER	LEARNER	GPA	O-NET
TEACHER	--	--	--	--
LEARNER	0.484	--	--	--
GPA	0.056	0.717	--	--
O-NET	0.144	-0.004	0.035	--

Standardized Indirect Effects of ETA on ETA

	TEACHER	LEARNER	GPA	O-NET
TEACHER	--	--	--	--
LEARNER	--	--	--	--
GPA	0.347	--	--	--
O-NET	-0.012	0.025	--	--

Standardized Total Effects of ETA on Y

	TEACHER	LEARNER	GPA	O-NET
STC8	0.234	--	--	--
STC9	0.387	--	--	--
SLN1	0.104	0.214	--	--
SLN2	0.113	0.233	--	--
SLN3	0.103	0.214	--	--
SLN4	0.164	0.338	--	--
SLN5	0.145	0.299	--	--
SLN6	0.148	0.306	--	--
SLN7	0.119	0.247	--	--
GPA	0.019	0.242	0.337	--
ONET	3.434	-0.083	0.826	23.791

Completely Standardized Total Effects of ETA on Y

	TEACHER	LEARNER	GPA	O-NET
STC8	0.764	--	--	--
STC9	0.706	--	--	--
SLN1	0.320	0.661	--	--
SLN2	0.382	0.789	--	--
SLN3	0.343	0.707	--	--
SLN4	0.320	0.661	--	--
SLN5	0.254	0.524	--	--
SLN6	0.342	0.706	--	--
SLN7	0.397	0.820	--	--
GPA	0.056	0.717	1.000	--
ONET	0.144	-0.004	0.035	1.000

Standardized Indirect Effects of ETA on Y

	TEACHER	LEARNER	GPA	O-NET
STC8	--	--	--	--
STC9	--	--	--	--
SLN1	0.104	--	--	--
SLN2	0.113	--	--	--
SLN3	0.103	--	--	--
SLN4	0.164	--	--	--
SLN5	0.145	--	--	--
SLN6	0.148	--	--	--
SLN7	0.119	--	--	--
GPA	0.019	0.242	--	--
ONET	3.434	-0.083	0.826	--

Completely Standardized Indirect Effects of ETA on Y

	TEACHER	LEARNER	GPA	O-NET
STC8	--	--	--	--
STC9	--	--	--	--
SLN1	0.320	--	--	--
SLN2	0.382	--	--	--
SLN3	0.343	--	--	--
SLN4	0.320	--	--	--
SLN5	0.254	--	--	--
SLN6	0.342	--	--	--
SLN7	0.397	--	--	--
GPA	0.056	0.717	--	--
ONET	0.144	-0.004	0.035	--

Standardized Total Effects of KSI on Y

SCHOOL

STC8	0.188
STC9	0.311
SLN1	0.174
SLN2	0.190
SLN3	0.174
SLN4	0.276
SLN5	0.244
SLN6	0.249
SLN7	0.201
GPA	0.118
ONET	10.636

Completely Standardized Total Effects of KSI on Y

SCHOOL

STC8	0.613
STC9	0.567
SLN1	0.539
SLN2	0.643
SLN3	0.576
SLN4	0.538
SLN5	0.427
SLN6	0.575
SLN7	0.668
GPA	0.350
ONET	0.447