

Table 1

Factor Analysis Results: Gains Items—Only Traditional-Aged Students and Two-Year Students Intending to Transfer Included

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	Academic Gains	Personal-Social Gains
GNGENLED	.51	.14
GNWORK	.45	.13
GNWRITE	.75	.00
GNSPEAK	.65	.15
GNANALY	.82	.00
GNSOLVE	.70	-.01
GNCOMPTS	.62	.00
GNSELF	.01	.69
GNDIVERS	.00	.81
GNETHICS	.01	.84
GNCOMM	.40	.62

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% Variance Explained	45%	7%
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Factor Correlations		
Academic Gains	--	
Personal-Social Gains	.69	--

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Note. Principal axis factoring was used with promax rotation; the pattern matrix is shown.

Table 2

Factor Analysis Results: Gains Items—All Students

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	Academic Gains	Personal-Social Gains
GNGENLED	.55	.09
GNWORK	.49	.11
GNWRITE	.77	-.06
GNSPEAK	.71	.09
GNANALY	.81	-.03
GNSOLVE	.65	-.03
GNCOMPTS	.58	.03
GNSSELF	.08	.69
GNDIVERS	-.03	.78
GNETHICS	-.03	.86
GNCOMM	.06	.64

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% Variance Explained	44%	7%
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Factor Correlations		
Academic Gains	--	
Personal-Social Gains	.68	--

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Note. Principal axis factoring was used with promax rotation; the pattern matrix is shown.

Table 3

Factor Analysis Results: Perceptions of the Environment Items—Only Traditional-Aged Students and Two-Year Students Intending to Transfer Included

	Coursework Env.	Campus Climate	Relational Env.
MEMORIZE	.38	.01	.00
ANALYZE	.80	-.01	.00
SYNTHESIZE	.77	.01	-.01
EVALUATE	.72	.05	-.05
APPLY	.77	-.05	.03
ENVDIVS	.12	.56	.05
ENVACAD	-.04	.80	-.04
ENVSOCL	-.04	.85	.00
ENVSTU	.10	.01	.47
ENVFAC	.01	-.02	.68

ENVADM	-09	.01	.73
ENVSCHOL	.26	.21	.14
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% Variance Explained	29%	12%	5%

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Factor Correlations

Coursework Env.	--		
Campus Climate	.37	--	
Relational Env.	.29	.56	--

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Note. Principal axis factoring was used with promax rotation; the pattern matrix is shown.

Table 4

Factor Analysis Results: Perceptions of the Environment Items—All Students

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	Coursework Env.	Campus Climate	Relational Env.
MEMORIZE	.34	.07	-.05
ANALYZE	.78	-.06	-.02
SYNTHESIZE	.77	.00	.00
EVALUATE	.71	.01	.00
APPLY	.72	.00	.02
ENVDIVS	.11	.56	.07
ENVACAD	-.03	.82	-.03
ENVSOCAL	-.02	.84	-.01
ENVSTU	.06	.03	.52
ENVFAC	-.01	-.05	.80
ENVADM	-.08	.05	.69

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ENVSCHOL	.27	.20	.07
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% Variance Explained	29%	12%	6%

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Factor Correlations

Coursework Env.	--		
Campus Climate	.34	--	
Relational Env.	.24	.52	--

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Note. Principal axis factoring was used with promax rotation; the pattern matrix is shown.

Table 5

Factor Analysis Results: Student Involvement—Only Traditional-Aged Students and Two-Year Students Intending to Transfer  
Included

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	Student-Faculty	Active Learning	Academic	Diversity	Effort
FACIDEAS	.62	.17	-.09	-.01	.06
FACGRADE	.54	-.06	.26	-.04	.04
FACPLANS	.57	.11	-.04	-.05	.10
FACFEED	.52	-.19	.17	.03	.10
CLQUEST	.44	.06	-.05	.04	.04
OOCIDEAS	.38	-.05	.03	.24	.11
WORKHARD	.41	-.06	.10	.02	.36
COCURR	-.16	.78	.02	.06	.03
COMMPROJ	.06	.49	.09	.00	-.14
TUTOR	.22	.49	-.11	.06	-.06

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FACOTH	.41	.50	-.16	-.05	-.05
ACADPR	-.09	.48	.09	.03	.40
OCCGRP	.06	.40	.30	.02	-.11
CLPRESEN	.13	.27	.34	-.04	-.14
CLASSGRP	.20	-.11	.35	.04	-.20
INTEGRAT	-.03	.05	.67	.02	.09
EMAIL	.09	.17	.54	-.02	-.06
ITACADEM	.08	.04	.51	-.02	-.13
REWROPAP	-.03	-.05	.46	-.02	.28
DIVSTUD	.07	-.01	-.03	.83	-.05
DIFFSTUD	-.03	.05	.01	.85	-.05
CLUNPREP	-.18	.11	.12	.07	-.41

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% Variance Explained	25%	5%	4%	3%	2%
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## Factor Correlations

Student-Faculty	--	
Active Learning	.49	--

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Academic	.54	.54	--		
Diversity	.45	.36	.38	--	
Effort	.01	.31	.41	.09	--

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Note. Principal axis factoring was used with promax rotation; the pattern matrix is shown.

Table 6

Factor Analysis Results: Student Involvement—All Students

	Student-Faculty	Active Learning	Diversity	Info. Tech.	Classroom	Integrate
FACIDEAS	.63	.17	-.02	-.04	.01	-.01
FACPLANS	.59	.13	-.04	.07	-.05	.02
FACGRADE	.55	-.08	-.01	.37	-.03	.00
FACFEED	.50	-.14	.07	.04	.02	.11
WORKHARD	.39	-.03	.00	-.01	.02	.32
OOCIDEAS	.33	-.06	.24	.00	.03	.13
CLQUEST	.33	-.03	.06	-.07	.13	.14
COCURR	-.15	.73	.01	.11	-.12	.05
TUTOR	.13	.44	.07	-.07	.09	-.05
FACOTH	.38	.46	.00	-.11	.02	-.11
COMMPROJ	.07	.43	-.03	-.04	.21	-.09

ACADPR	-.07	.49	.00	.07	-.15	.40
DIVSTUD	.04	.01	.83	.00	.00	.00
DIFFSTUD	-.02	.04	.91	.03	-.03	-.05
OCCGRP	-.02	.31	.00	.02	.49	-.04
CLPRESEN	-.01	.17	-.05	.02	.48	.07
CLASSGRP	.07	-.09	-.02	-.01	.59	-.08
EMAIL	.06	.09	.00	.90	.00	-.12
ITACADEM	.10	-.10	.04	.39	.15	-.03
REWROPAP	.08	-.01	-.04	-.03	.13	.49
INTEGRAT	.00	-.02	.03	.12	.35	.41
CLUNPREP	-.20	.03	.06	.21	.23	-.39
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% Variance Explained	24%	5%	4%	3%	2%	2%

Factor Correlations

Student-Faculty	--		
Active Learning	.42	--	
Diversity	.47	.27	--

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Info. Tech.	.39	.46	.33	--		
Classroom	.56	.46	.47	.52	--	
Integrate	.32	.26	.27	.50	.44	--

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Note. Principal axis factoring was used with promax rotation; the pattern matrix is shown.

Table 7

Means, Standard Deviations, Number of Items, and Reliabilities for Measured Variables—Only Two-Year Students Intending to Transfer Included

Variable	Mean	Std. Dev.	Items	Reliability
<u>Background</u>				
Female	0.64	0.48		
Student of Color	0.17	0.38		
First Generation	0.45	0.50		
Class Level	1.68	1.16		
Transfer	0.27	0.44		
<u>Perceptions of the Environment</u>				
Coursework Environment	13.94	3.30	5	0.81
Campus Climate	6.59	2.37	3	0.78
Relational Environment	15.49	3.21	3	0.65
<u>Student Effort</u>				

Student-Faculty	16.88	3.89	7	0.77
Active Learning	10.53	4.51	6	0.72
Academic	15.88	3.59	6	0.69
Diversity	4.96	1.89	2	0.84
<u>Gains</u>				
Academic	19.69	4.68	7	0.85
Personal-Social	9.59	3.28	4	0.84

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Table 8

Means, Standard Deviations, Number of Items, and Reliabilities for Measured Variables—All Students

Variable	Mean	Std. Dev.	Items	Reliability
<u>Background</u>				
Female	0.64	0.48		
Student of Color	0.23	0.42		
First Generation	0.46	0.50		
Class Level	1.92	1.28		
Transfer	0.45	0.50		
<u>Perceptions of the Environment</u>				
Coursework Environment	14.37	3.15	5	0.79
Campus Climate	6.48	2.37	3	0.79
Relational Environment	15.69	3.32	3	0.70
<u>Student Effort</u>				
Student-Faculty	17.48	3.86	7	0.76

Active Learning	8.43	3.64	5	0.64
Diversity	5.02	1.86	2	0.85
Classroom	7.01	2.03	3	0.61
Info. Tech.	5.53	1.73	2	0.58
Integrate	5.76	1.58	2	0.62
<u>Gains</u>				
Academic	20.14	4.63	7	0.85
Personal-Social	9.60	3.28	4	0.85

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Table 9

## Institutions, Sample Sizes, Dates, and Modes of CCSSE or NSSE Administration

Sector	Institution	Sample Size	Dates	Modes of Administration
Two-Year	Connecticut Community Colleges (includes 12 institutions)	490, 3,676	2004 and 2006	printed survey, in class
Two-Year	Oakton Community College	23, 258	2003, 2006	printed survey, in class
Two-Year	Sinclair Community College	184, 1,142	2002, 2003, 2004, 2005 and 2006	printed survey, in class
Two-Year	Ivy Tech Community College	51, 0	2006	printed survey, in class
Four-Year	Springfield College	264, 256	2004 and 2006	printed and/or web, mailed
Four-Year	Bowling Green State University	360, 1,187	2000, 2001, 2003, 2005,	printed and/or web, mailed
Four-Year	Indiana University-Purdue University-Indianapolis	775, 3,603	2002, 2004, and 2006	printed and/or web, mailed

Table 10

Standardized Direct, Indirect, and Total Effects and Squared Multiple Correlations for the Final Model—Only Two-Year Students  
Intending to Transfer Included

	Environment	Involvement	Gains
Gender	0.074	0.058	
		0.029	0.085
	0.074	0.087	0.085
First Generation			0.075
			0.075
Class Level		0.487	0.157
			0.153
		0.487	0.310
Ethnicity	0.106		

		0.041	0.095
	0.106	0.041	0.095
Transfer Status		-0.126	
			-0.040
		-0.126	-0.040
Environment		0.388	0.772
			0.122
		0.388	0.894
Involvement			0.314
			0.314
SMC	0.017	0.396	0.963

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Note. All direct effects are significant at  $p < .01$ . SMC = Squared Multiple Correlation.

Table 11

Goodness-of-Fit Statistics for Group Invariance Tests—Only Two-Year Students Intending to Transfer Included

Model	$\chi^2$	<i>df</i>	$\Delta \chi^2$	$\Delta df$	$\rho$
Baseline Model (combined two-year and four-year)	153	43			
All Structural Paths and Factor Loadings Invariant	287	101	134	58	< .01
All Structural Paths Invariant	249	96	96	53	< .01
All Factor Loadings Invariant	230	91	77	48	< .01
Structural Paths from Involvement to Gains, Perceptions of the Environment to Gains, and Perceptions of the Environment to Involvement Invariant	227	89	74	46	< .01
Factor Loadings from Observed Variables to Gains Invariant	219	87	66	44	< .01
Factor Loadings from Observed Variables to Perceptions of the Environment Invariant	218	87	65	44	< .01

## Factor Loadings from Observed Variables to

Involvement Invariant	229	89	76	46	< .01
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Table 12

Conditional Effects of Mean Differences in Learning Gains Between Two-Year and Four-Year Students—Only Two-Year Students  
Intending to Transfer Included

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Group	Mean Difference	Standard Error	Critical Ratio
First Generation	-2.508	0.332	-7.555*
Not First Generation	-3.112	0.293	-10.609*
Students of Color	-2.488	0.522	-4.767*
Caucasian Students	-2.875	0.241	-11.921*
Female	-2.3110	0.272	-8.495*
Male	-3.582	0.361	-9.909*
Freshmen	-2.457	0.264	-9.295*
Not Freshmen	-2.281	0.457	-4.988*
Transfer	-4.181	0.448	-9.331*

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Not Transfer	-2.354	0.250	-9.430*
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Note. Mean differences represent values for two-year colleges with means for four-year institutions set to zero. \*  $\rho < .001$ .

Table 13

Standardized Direct, Indirect, and Total Effects and Squared Multiple Correlations for the Final Model—All Students

	Environment	Involvement	Gains
Gender		0.053	0.044
			0.015
		0.053	0.059
First Generation		-0.056	0.055
			-0.016
		-0.056	0.040
Class Level	-0.044	0.496	0.206
		-0.018	0.097
	-0.044	0.478	0.303
Ethnicity	0.072		0.036

		0.029	0.067
	0.072	0.029	0.103
Transfer	-0.127	-0.114	
		-0.051	-0.150
	-0.127	-0.164	-0.150
Environment		0.399	0.821
			0.111
		0.399	0.932
Involvement			0.278
			0.278
SMC	0.025	0.382	1.000

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Note. All direct effects are significant at  $p < .01$ . SMC = Squared Multiple Correlation.

Table 14

Goodness-of-Fit Statistics for Group Invariance Tests—All Students

Model	$\chi^2$	<i>df</i>	$\Delta \chi^2$	$\Delta df$	$\rho$
Baseline Model (combined two-year and four-year)	1630	50			
All Structural Paths and Factor Loadings Invariant	1705	121	75	71	> .05

Table 15

## Conditional Effects of Mean Differences in Learning Gains Between Two-Year and Four-Year Students—All Students

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Group	Mean Difference	Standard Error	Critical Ratio
First Generation	-2.108	0.131	-16.094*
Not First Generation	-2.352	0.122	-19.216*
Students of Color	-1.862	0.190	-9.807*
Caucasian Students	-2.432	0.101	-24.020*
Female	-1.946	0.113	-17.279*
Male	-2.634	0.147	-17.879*
Freshmen	-1.886	0.119	-15.838*
Not Freshmen	-1.179	0.153	-7.732*
Transfer	-2.834	0.139	-20.439*

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Not Transfer	-1.703	0.116	-14.686*
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Note. Mean differences represent values for two-year colleges with means for four-year institutions set to zero. \*  $\rho < .001$ .

Figure 1. The Initial Research Model—Only Two-Year Students Intending to Transfer Included

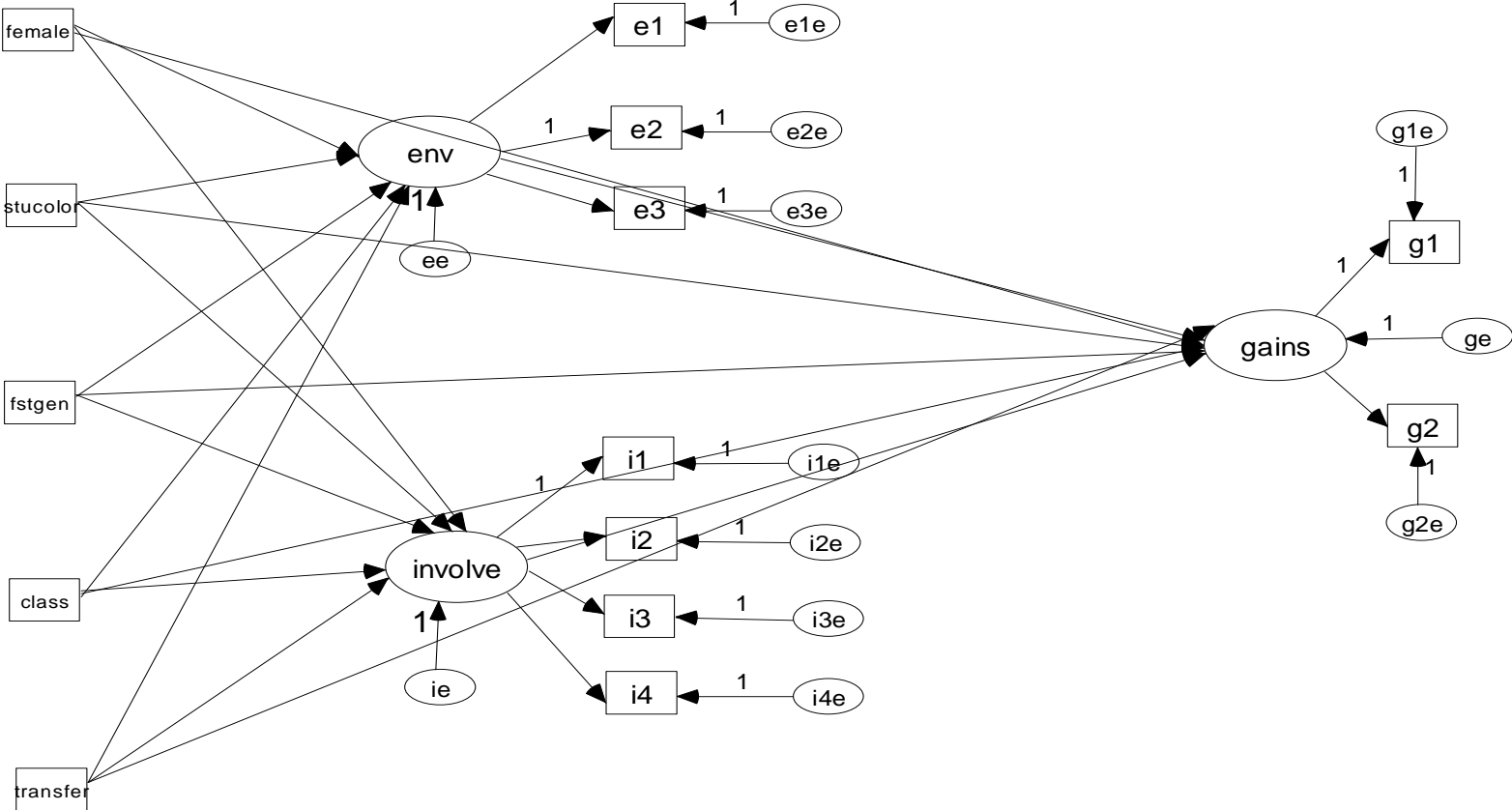


Figure 2. The Refined Research Model—Only Two-Year Students Intending to Transfer Included

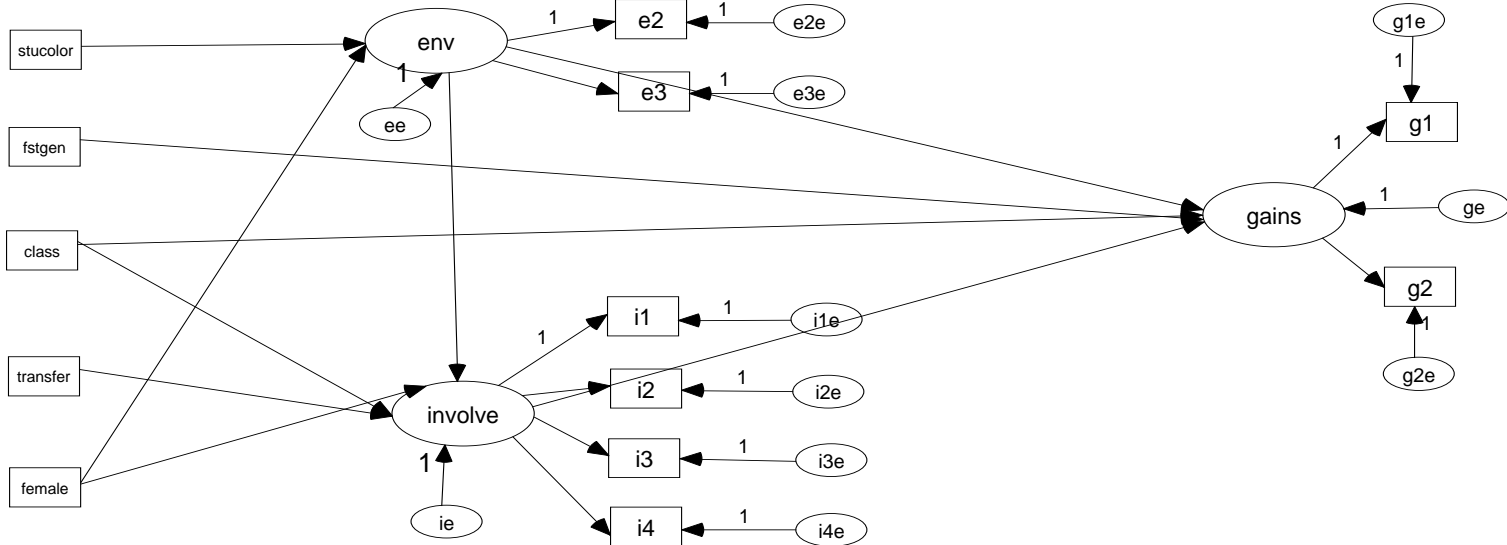


Figure 3. The Initial Research Model-All Two-Year Students Included

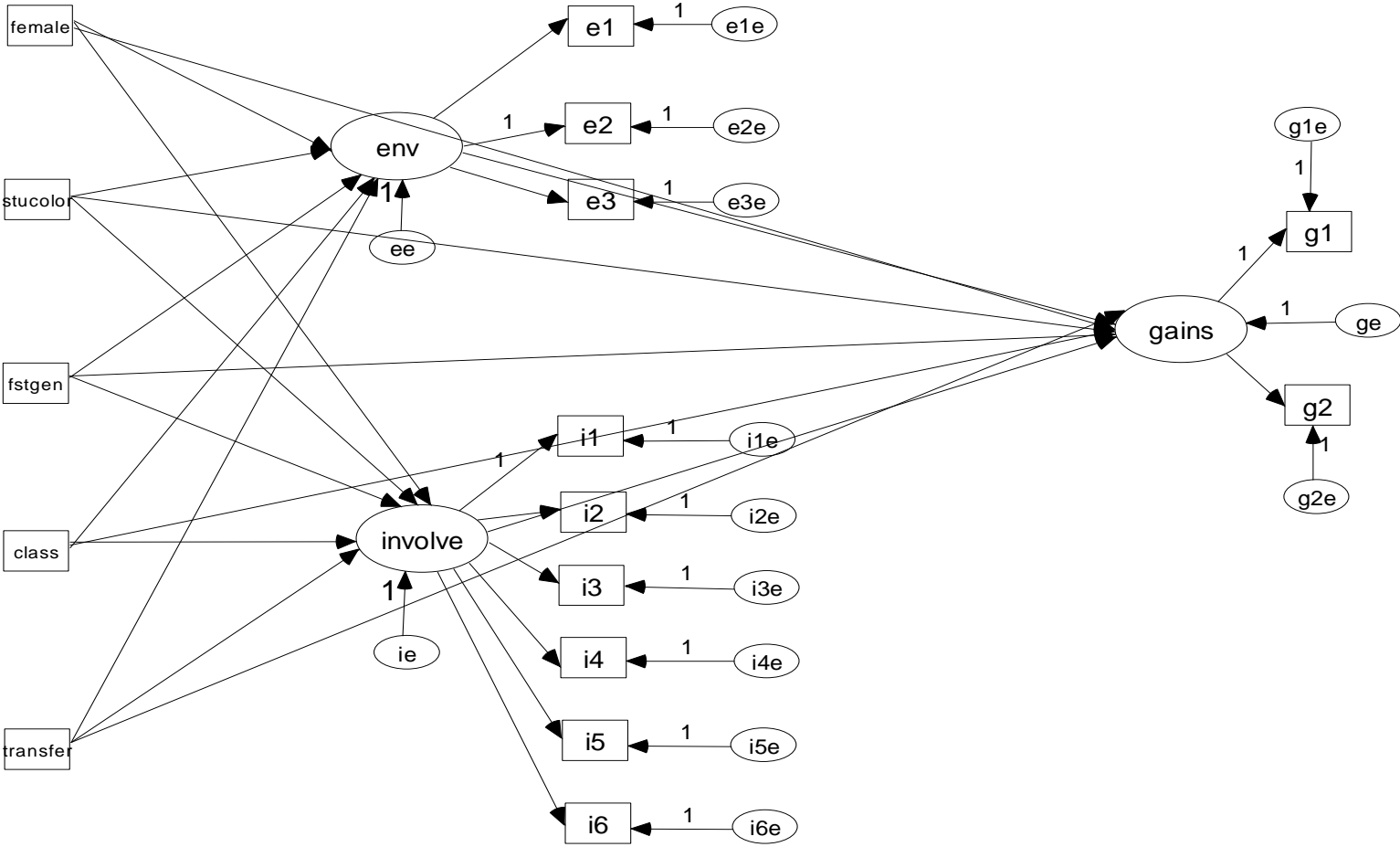


Figure 4. The Refined Research Model-All Two-Year Students Included

