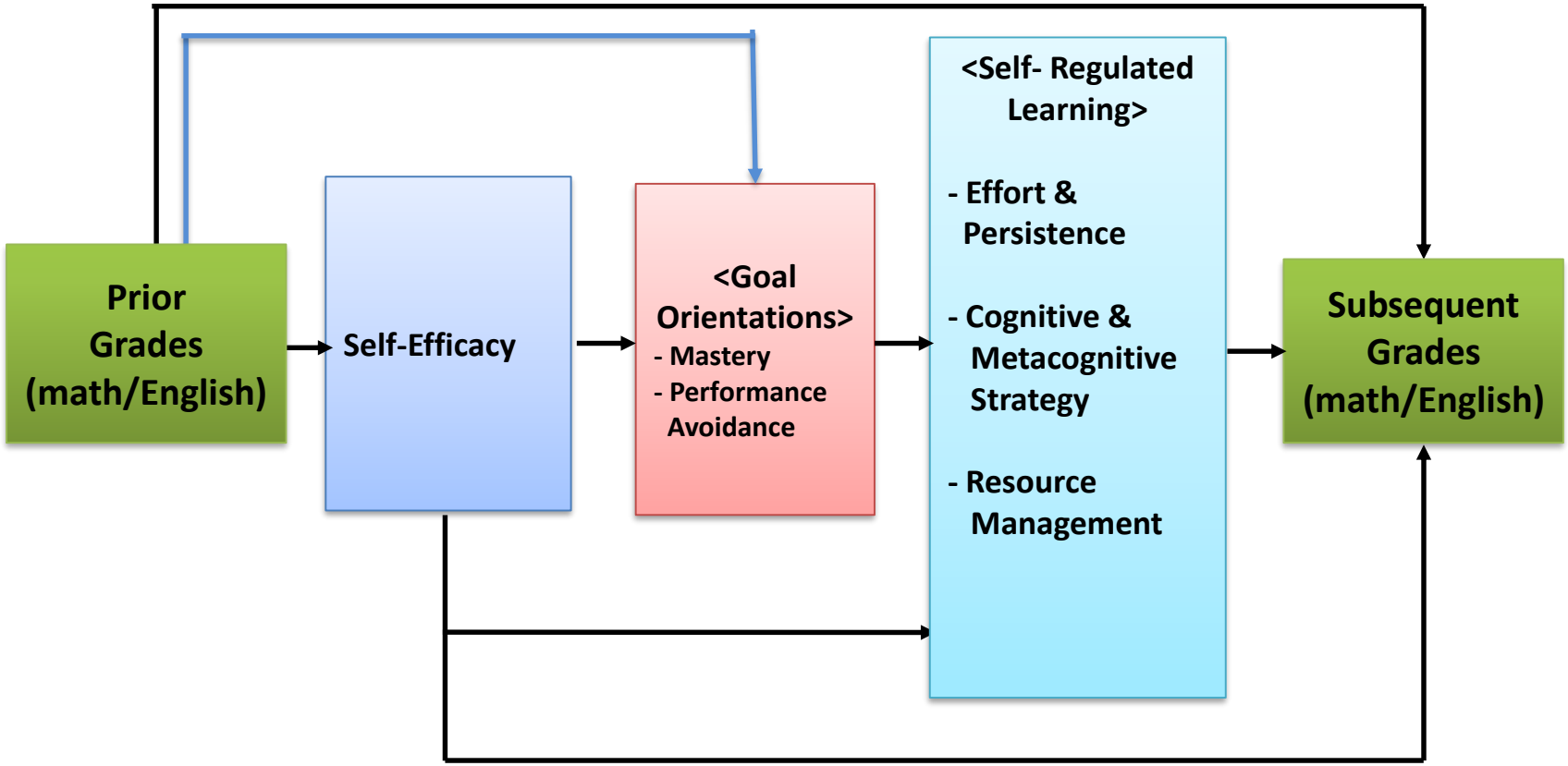
The 2nd Paper :
The Relationships among Motivation, Self-Regulated Learning (SRL), & Academic Achievement
for Secondary School Students
in South Korea.

Research Models

Based on Structural Equation Modeling(SEM)



Model 1: Hypothesized Model with Black line paths
Model 2: Modified Model adding the Blue line paths to Model 1

Hypotheses

H1. Prior academic achievement will predict subsequent academic performance.

H2. Prior academic achievement will predict self-efficacy.

H3. Self-Efficacy will predict mastery and performance avoidance goal orientations, with an inverse relation to performance avoidance.

H4. Self-efficacy will predict students' adoption of self-regulatory processes (i.e., effort and performance, cognitive and meta-cognitive strategy use, resource management).

H5. Goal orientations will predict students' adoption of self-regulatory processes.

H6. Self-efficacy will predict subsequent academic performance.

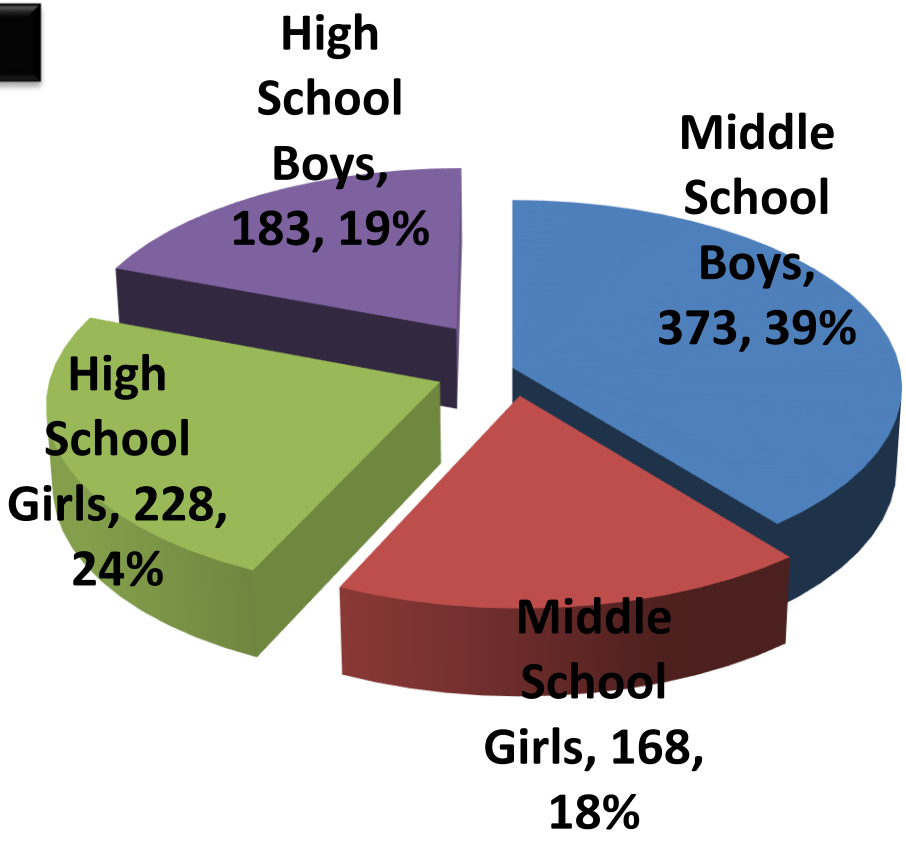
H7. Self-regulatory processes will predict subsequent academic performance.

H8. Goal orientations and self-regulatory processes will partially mediate the effects of self-efficacy on subsequent academic performance.

H9. Self-regulatory processes will mediate the effects of goal orientations on subsequent academic performance.

Sample

Participants



952 students in total
From 3 middle Schools & 2 High Schools of College Prep, Seoul in Korea

Measurement

Instrument

The Self-Motivated Learning Inventory , 43 Items based on Seven-Point Likert Scale

2 Sets for mathematics and English

Foregoing Agents of **Motivation**			Ongoing Mechanisms of **SRL**		
Self-Efficacy 9 items	**Mastery Goal Orientation** 4 items	**Performance Avoidance Goal Orientation** 4 items	**Effort & Persistence** 7 items	**Cognitive** (7 items)& **Metacognitive** (5 items) **Strategies**	**Resource Management (7 items)** Time & Environment (3items) Peer Learning & Help Seeking (4 items)

Composites

Each Composite of 6 Constructs was Average of Item Scores to Each Construct

Academic Achievement

Mathematics , English ***Standardized Scores*** *within Each Class in Five Schools*

- Mid-Term (Exam, Assignment , Quizzes)
- Final-Term (Exam, Assignment , Quizzes)

Descriptive Statistics of factor loadings and the Measurement Model Fits

Mathematics (n = 952)				English (n = 952)			
Factor Loadings				*Factor Loadings*			
Minimum	Maximum	Median	Mean	Minimum	Maximum	Median	Mean
.21	.90	.74	.70	.11	.92	.75	.70
Measurement Model Fit				*Measurement Model Fit*			
Motivation (Foregoing agents)	$\chi 2/ df$	CFI	RMSEA	$\chi 2/ df$	CFI	RMSEA	
	950.60 /107	.909	.091	922.66 /107	.911	.090	
Self-regulatory processes (Ongoing Mechanisms)	$\chi 2/ df$	CFI	RMSEA	$\chi 2/ df$	CFI	RMSEA	
	1665.46 /296	.917	.070	1714.11 /296	.917	.071	

Note. Negatively–worded items showed low factor loadings due to the wording effe ct (Refer to Schriesheim & Eisenbach, 1995)

Descriptive Statistics and Reliabilities for Six Construct Composites

Construct		Mathematics (n = 952)					English (n = 952)				
		M	SD	SK	KR	Alpha	M	SD	SK	KR	Alpha
Motivation (Foregoing agents)	SE	3.79	1.25	.11	-.33	.90	3.84	1.22	.07	-.25	.86
	MG	4.64	1.39	-.32	-.34	.83	4.74	1.39	-.43	-.17	.83
	PA	4.54	1.30	-.32	-.21	.67	4.43	1.32	-.39	-.15	.69
Self-regulatory processes (Ongoing Mechanisms)	EP	4.44	1.27	-.22	-.18	.89	4.44	1.25	-.21	-.11	.89
	CM	3.88	1.24	-.11	-.03	.94	3.82	1.25	-.11	.02	.94
	RM	3.91	1.18	-.17	.08	.84	3.77	1.19	-.09	.12	.86

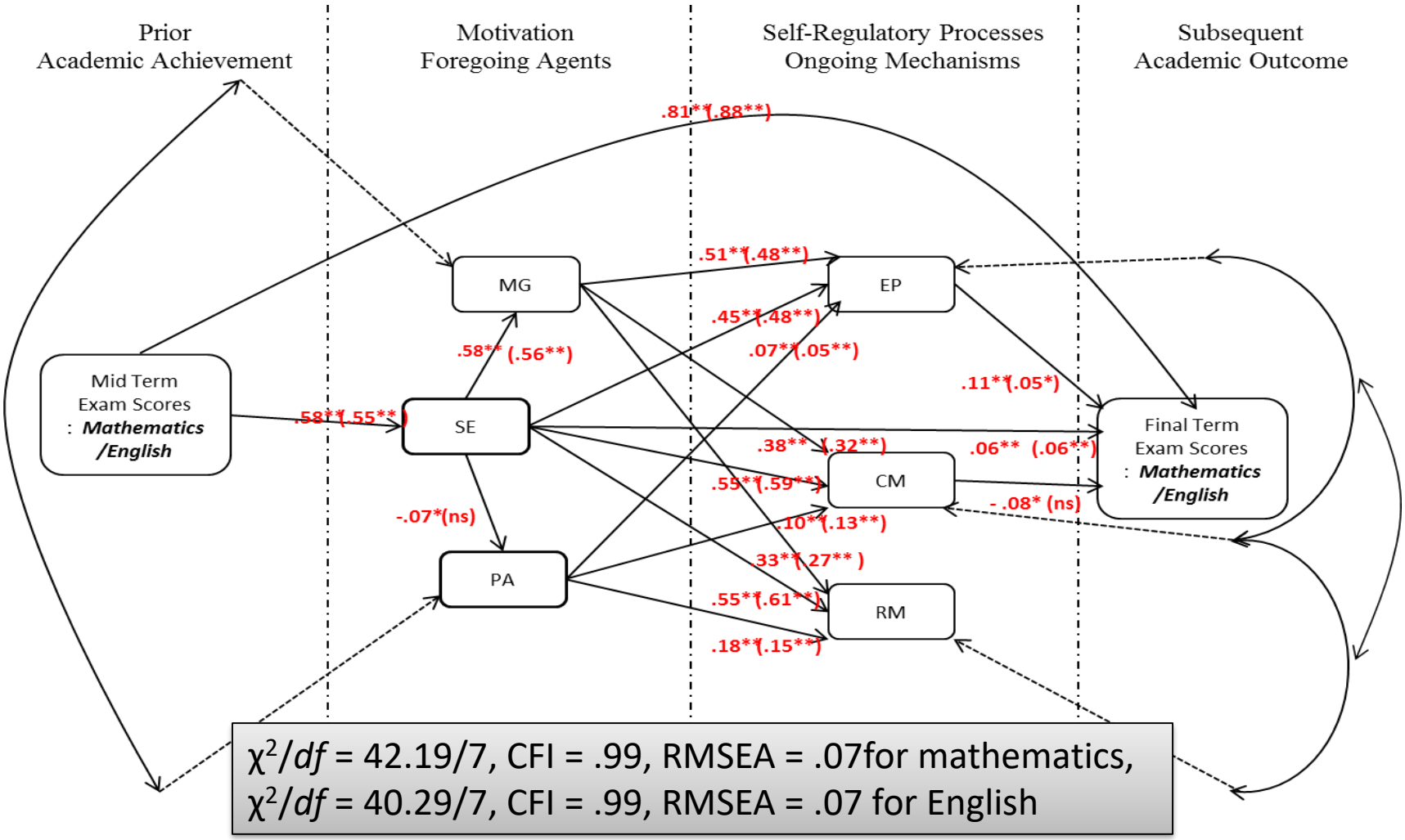
Note. MV=Motivation; SRL = Self-Regulated Learning; SE=Self-Efficacy; MG = Mastery-Goal orientation; PA = Performance-Avoidance Goal orientation; EP = Effort &Persistence; CM=Cognitive & Metacognitive Strategy; RM = Resource Management; M = mean; SD = Standard Deviation; SK= Skewness; KR = Kurtosis.
* Mid Term, Final Term scores were scored by percentage.

Analyses

- Path analyses for multivariate structural models using the SEM for mathematics and English through MPLUS
- Model fit indices: Chi-square and degree of freedom (i.e. χ^2/df), RMSEA, and CFI (Brown, 2006)
- Mediation Effects: the mediated effects were detected through the delta standard error method under the MPLUS

Results

Model 1: Standardized coefficients for hypothesized model



χ^2/df = 42.19/7, CFI = .99, RMSEA = .07for mathematics,
χ^2/df = 40.29/7, CFI = .99, RMSEA = .07 for English

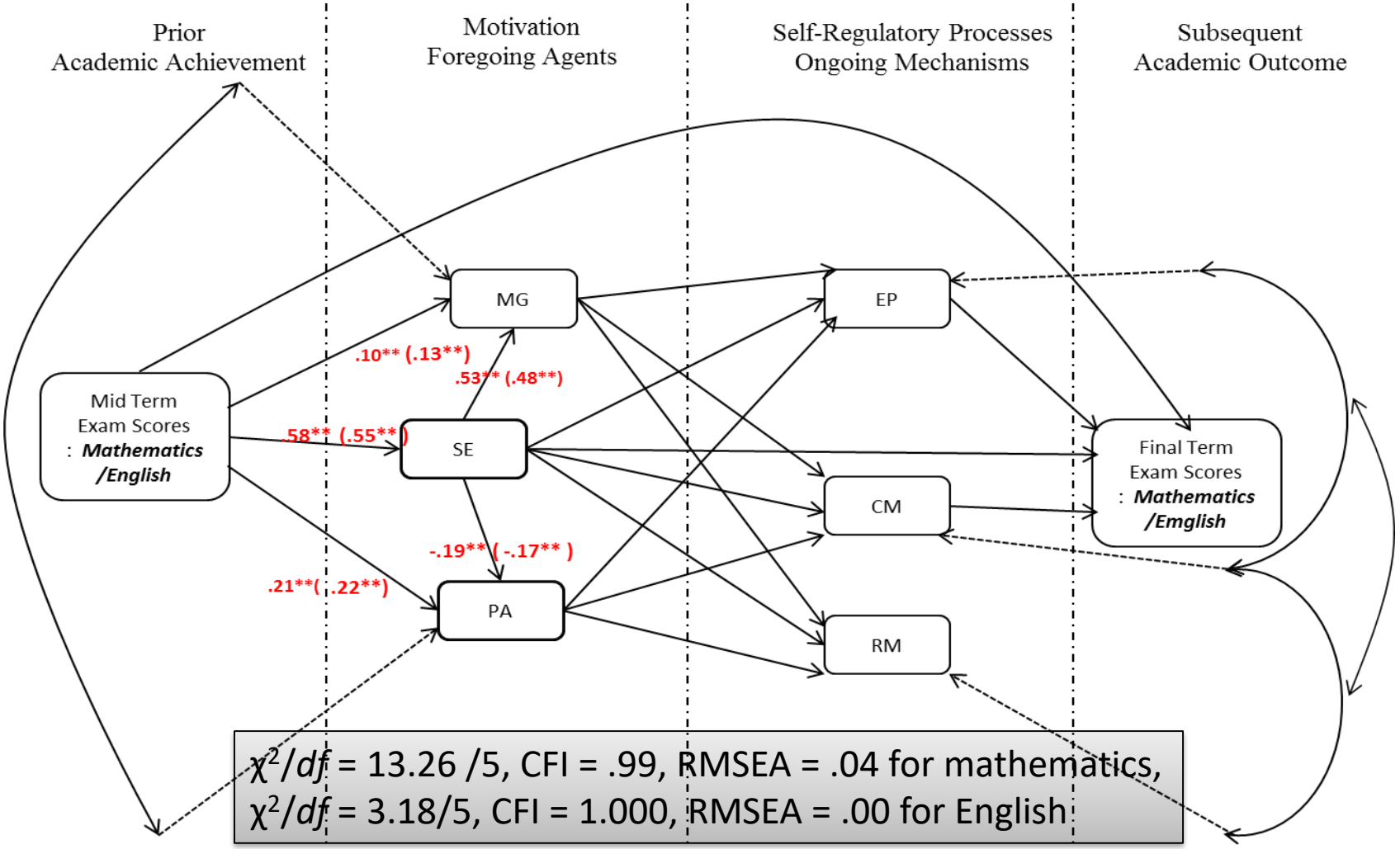
The values in parentheses indicate the path coefficients in English..

SE = self-efficacy; MG = mastery goal orientation; PA = performance avoidance goal orientation; EP = effort & persist ence; CM = cognitive and metacognitive strategy; RM = resource management.

* $p < 0.05$, 2-tailed; ** $p < 0.01$, 2-tailed; ns: statistically non-significance

Midterm and final term math and English exam scores were converted to the standardized *z* scores within class.

Model 2: Standardized coefficients for modified model



The values in parentheses indicate the path coefficients in English..

SE = self-efficacy; MG = mastery goal orientation; PA = performance avoidance goal orientation; EP = effort & persist ence; CM = cognitive and metacognitive strategy; RM = resource management.

* $p < 0.05$, 2-tailed; ** $p < 0.01$, 2-tailed; ns: statistically non-significance

Midterm and final term math and English exam scores were converted to the standardized *z* scores within class.

Mediated Effects

Mediated Pathway: Mathematics	Z	P
SE → goal orientations (MG or PA) and/or SRL → final term exam scores		
• SE → EP → final term exam scores	3.66	.01.
• SE → MG → EP → final term exam scores	3.58	01
• SE → PA → EP → final term exam scores	-2.39	.05
Goal orientation →ongoing SRL → final term exam scores		
• MG → EP → final term exam scores	3.66	.01
• PA → EP → final term exam scores	2.74	.01
Mediated Pathway: English	**Z**	**P**
SE → goal orientations (MG or PA) and/or SRL → final term exam scores		
• SE → EP → final term exam scores	2.05	.05
• SE → MG → EP → final term exam scores	2.03	.05
Goal orientation →ongoing SRL → final term exam scores		
• MG → EP → final term exam scores	2.05	.05

Note. SE=self-efficacy; MG = mastery goal orientation; PA = performance avoidance goal orientation; EP = effort & persis tence; CM = cognitive and metacognitive strategy; RM = resource management.

Discussion

- SE was related positively to MG but negatively to PA.
- The foregoing agents (SE, MG, PA) were substantially connected to the ongoing self-regulatory functions, signifying their reciprocal functions for students' academic performance.
- Contrary to the findings of previous studies, PA was positively related to all of the self-regulatory processes
  - → Marsh et al. (2006) cautioned that the tendency of those psychological educational constructs should vary in nationalities, cultural settings.
  - → the present study implied that Korean students in high academic competition and parental expectations evenly struggle for their learning performance whichever their goal orientation is.
- the strong correlations among the ongoing self-regulatory mechanisms (EP, CM, RM), but showed the differentiated patterns of relationships with subsequent academic performance
  - → theoretically and conceptually distinguished from each other
  - → EP was the most contributor but CM was a negative suppressor for subsequent academic outcomes.

Discussion

- Starting from preceding academic performance, the foregoing motivational agents and the ongoing self-regulatory mechanisms interacted in a dynamic and reciprocal manner, , which, in turn, substantially contributed to subsequent academic outcomes.
- supported the theory of Bandura's self-system in reciprocal determinism (1978) and the theoretical literature of motivation and SRL for students' learning.

Implications

- With the evidence on the specific structure of the relationships among motivation, SRL, and academic achievement, students' learning traits may be interpreted in a more precise way.
- The specific information on students' learning traits should enable teachers or educators to design effective educational interventions.
- All in all, the results from the present study can offer the systematic evidences on the students' motivational and self-regulatory functions on their academic performance.

Limitations

- Self-reported measurements
- The observed scores
- Population Generalizability
- Contextual factors (e.g., parental variables, classroom goal structures)
- Reflective measure immediately after midterm and final term exam

Rationale

- Despite a number of studies on the relationships among adolescents' motivation, SRL, and academic achievement,
- most studies did not address the specific and inclusive components of motivation and SRL for learning performance and the structural relationships with academic performance.
- Sins, Joolingen, Savelsbergh, and Hout-Wolters (2008) examined the structural relationships among motivation, self-regulation, and academic performance only for the 11th graders. However, the only measure of SRL was cognitive strategy use involved in deep or surface approach, failing in addressing the multidimensionality of SRL

Rationale -continued

- Only a few studies for Korean adolescents' traits on motivation and SRL with proper psychometric measurement (e.g., Hong & O'Neil, 2001; Joo, Bong, & Choi, 2000; Kim, Schallert, & Kim, 2010; Yoon, 2009)
- Lacking in construct specification and inclusiveness, and/or population representativeness of secondary school students in Korea

Descriptive Statistics on Participants' Academic Achievement and Socioeconomic Status

	Middle School A (n = 195)				Middle School B (n = 179)				Middle School C (n = 167)			
	Mean	SD	SK	KR	Mean	SD	SK	KR	Mean	SD	SK	KR
Math_mid	61.15	23.43	-.19	-1.00	60.79	20.96	-.12	-.83	66.96	23.44	-.30	-1.16
Engl_mid	66.74	26.67	-.59	-.85	74.67	21.36	-.97	.20	65.70	25.37	-.33	-1.15
Math_final	67.31	18.71	-.52	-.53	60.27	25.45	-.20	-1.14	61.91	24.73	-.10	-1.21
Engl_final	64.21	23.65	-.43	-1.03	66.24	22.56	-.55	-.68	58.12	25.69	-.09	-1.27
	Hi School D (n = 215)				Hi School E (n = 196)				Total (n = 952)			
	Mean	SD	SK	KR	Mean	SD	SK	KR	Mean	SD	SK	KR
Math_mid	48.67	22.75	.17	-.93	60.08	27.61	-.23	-1.34	59.06	24.49	-.13	-1.08
Engl_mid	58.11	27.77	-.11	-1.33	59.69	27.83	-.31	-1.25	64.65	26.65	-.46	-1.04
Math_final	45.17	25.56	.42	-.96	47.05	26.91	.19	-1.15	55.87	25.96	-.11	-1.14
Engl_final	51.64	25.81	.11	-1.20	55.31	26.76	-.15	-1.29	58.85	25.53	-.23	-1.18

*Note.*SD = standard deviation; SK = skewness; KR = kurtosis; Math_mid, Engl_mid , Math_final, Engl_final = raw scores of midterm and final exam for mathematics and English graded by percentage.

Frequency of Socioeconomic Status

Middle School A (n = 195)			Middle School B (n = 179)			Middle School C (n = 167)		
SES	Frequency	%	SES	Frequency	%	SES	Frequency	%
1	11	6	1	2	1	1	13	8
2	18	9	2	14	8	2	11	7
3	22	11	3	19	11	3	28	17
4	71	36	4	67	37	4	69	41
5	33	17	5	36	20	5	22	13
6	27	14	6	31	17	6	10	6
7	9	5	7	9	5	7	10	6
Missing	4	2	Missing	1	1	Missing	4	2
Total	195	100	Total	179	100	Total	167	100

Hi School D (n = 215)			Hi School E (n = 196)			Total (n = 952)		
SES	Frequency	%	SES	Frequency	%	SES	Frequency	%
1	24	11	1	14	7	1	64	7
2	21	10	2	29	15	2	93	10
3	53	25	3	43	22	3	165	17
4	74	34	4	68	35	4	349	37
5	26	12	5	26	13	5	143	15
6	10	5	6	14	7	6	92	10
7	4	2	7	2	1	7	34	4
Missing	3	1	Missing	0	0	Missing	12	1
Total	215	100	Total	196	100	Total	952	100

Note. SES = socioeconomic status scores self-reported by students based on 7 point Likert scale.

Zero-Order Correlations among Motivation, SRL Variables, and Academic Outcomes in Mathematics and English

		Math								Engl							
		SE	MG	PA	EP	CM	RM	Mid Term [a]	Final [a]	SE	MG	PA	EP	CM	RM	Mid Term [a]	
Math	MG	.58**															
	PA	-.07*	.26**														
	EP	.74**	.79**	.17**													
	CM	.76**	.73**	.16**	.82**												
	RM	.72**	.69**	.22**	.79**	.87**											
	Mid [a]	.58**	.40**	.09**	.49**	.47**	.48**										
	Fin [a]	.58**	.44**	.09**	.52**	.48**	.50**	.88**									
Engl	SE	.55**	.33**	.04	.42**	.52**	.53**	,37**	.40**								
	MG	.33**	.62**	.28**	.51**	.51**	.51**	.29**	.25**	.55**							
	PA	.03	.24**	.56**	.17**	.15**	.19**	.12**	.08*	-.05	.29**						
	EP	.43**	.48**	.20**	.56**	.56**	.55**	.33**	.32**	.74**	.76**	.16**					
	CM	.48**	.42**	.17**	.49**	.67**	.61**	.33**	.32**	.75**	.65**	.20**	.75**				
	RM	.50**	.46**	.15**	.52**	.64**	.68**	.31**	.33**	.76**	.68**	.19**	.79**	.89**			
	Mid [a]	.41**	.30**	.13**	.37**	.37**	.40**	.76**	.77**	.55**	.40**	.13**	.47**	.46**	.45**		
	Fin [a]	.42**	.32**	.14**	.39**	.38**	.40**	.77**	.80**	.55**	.40**	.10**	.47**	.45**	.43**	.92**	

Note. SE=Self-Efficacy; MG=Mastery-Goal orientation; PA=Performance-Avoidance Goal orientation; EP=Effort &Persistence; CM=Cognitive & Metacognitive Strategy; RM=Resource Management

* $p < 0.05$, 2-tailed.

** $p < 0.01$, 2-tailed.

[a] midterm and final math and English exam scores were converted to the standardized *z* scores within class.