
A Predictive Examination of College Student Success with Cognitive, Noncognitive, High School Engagement and College Engagement Factors

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Introduction

College Student Success – Cognitive Predictors

- Resounding evidence of the ability to predict college performance and persistence
- High school GPA captures ~20% of the variance in college outcomes
- Standardized admissions test scores capture an additional 3-5%

College Student Success – Noncognitive Predictors

- Robbins and colleagues (2004) conducted meta-analysis and identified nine major psychosocial and study skills factors
- Individual characteristics can capture variance beyond that captured by cognitive predictors
 - ~8% of variance in retention
 - ~4% of variance in GPA

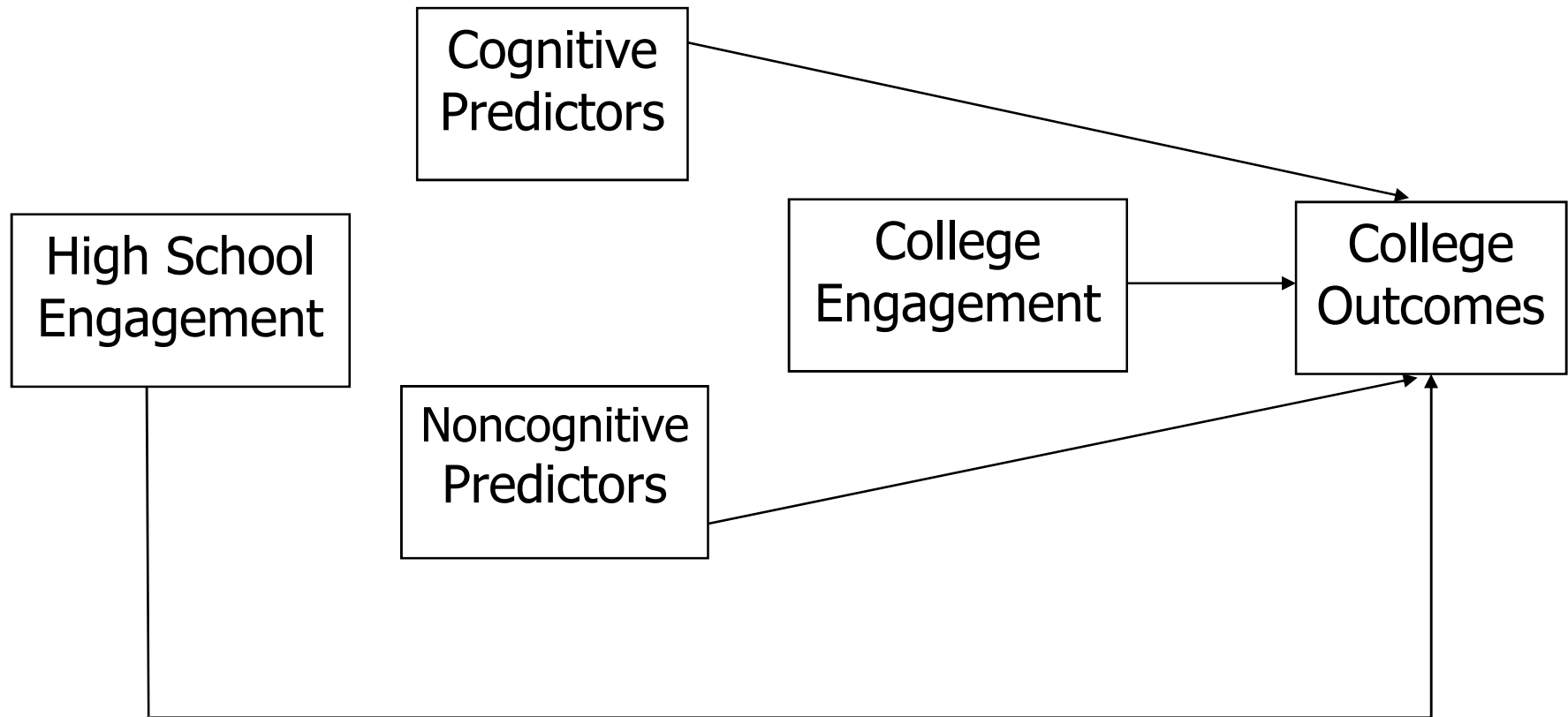
College Student Success – High School Engagement

- Maryland Adolescent Development in Context Study
 - 5 waves of data collection
 - N = 912, 51% Female, 67% African American
- High school engagement activities relate positively to GPA, educational aspirations, and educational attainment
 - Relationship mediated by high school grades and parents' educational attainment
 - Greater engagement with variety = better outcomes

College Student Success – College Engagement

- Types of engagement, as measured by NSSE
- Purposeful engagement by college students relates positively to GPA and retention
 - May vary as a function of identity statuses
- Specific types of engagement are most predictive of 1st year GPA and retention, 4th year GPA, employment, and pursuit of graduate education

College Student Success – Conceptual Model of Prediction



Interrelationships

- Positive relationship between predictors
 - Positive relationships between noncognitive individual characteristics and engagement
 - Ex: Athletic participation relates to self-esteem
 - Ex: School club participation relates to institutional commitment
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Statement of the Problem & Research Questions

- Purpose of this research project
 - Improve prediction of college outcomes by testing the additive predictive utility of cognitive, noncognitive, and engagement factors.
 - Research questions
 1. How do cognitive predictors, noncognitive predictors, college engagement, and high school engagement additively predict college student outcomes?
 2. What are the interrelationships within the conceptual model?
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Method

Method – Measures

- ACT College Entrance Exam
- Student Readiness Inventory
- National Survey of Student Engagement
- College Student Outcomes

Two cognitive predictors, one high school engagement variable, ten high school accomplishment variables, ten noncognitive predictors, thirteen college engagement variables, two college outcomes

Potential Predictors of College Success

Cognitive	High School Engagement	Noncognitive	College Engagement
High School GPA ACT composite	Total activities Total accomplish -Leadership -Music -Speech -Art -Writing -Science -Athletics -Community Service -Work	-Acad discipline -Acad self-confidence -Commitment -Comm skills -Emotional control -General determination -Goal striving -Social activity -Social connection -Study skills	-Class prep -Tutoring -Ideas w/faculty -Used electronics -Rx w/faculty -Academic support -Cope w/responsibility -No prep for class -Challenging exams -Problem sets -Exercise -Socializing -Learn on own

Robbins et al., 2006

Gordon et al., 2008

Method –

Data Availability and Participants

Institution	Cognitive	HS Eng.	Noncog	College Eng.	Outcomes
1 (n=203)	X	X		X	X
2 (n=161)	X	X	X		X
3 (n=433)	X	X	X		X
3 subset (n=68)	X	X	X	X	X

Data will be used to maximize sample sizes

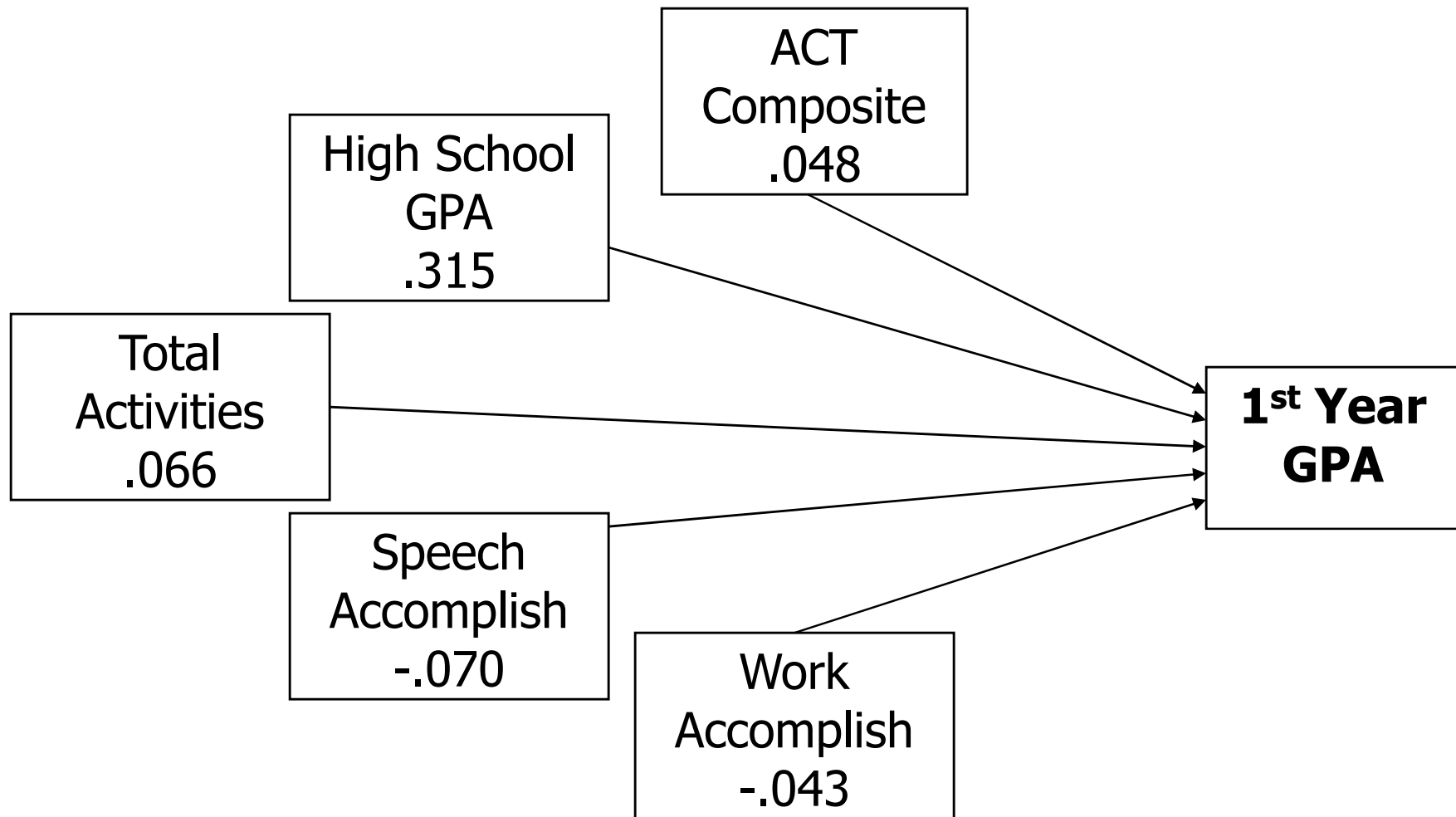
Method – Analysis

- Data is nested in institutions
 - Hierarchical linear regression
 - Simultaneous multiple regression
 - Means and slopes as outcomes (equivalent to unstandardized beta weights)
 - Predictor variables are grand mean centered
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Results and Discussion

Cognitive + High School Engagement

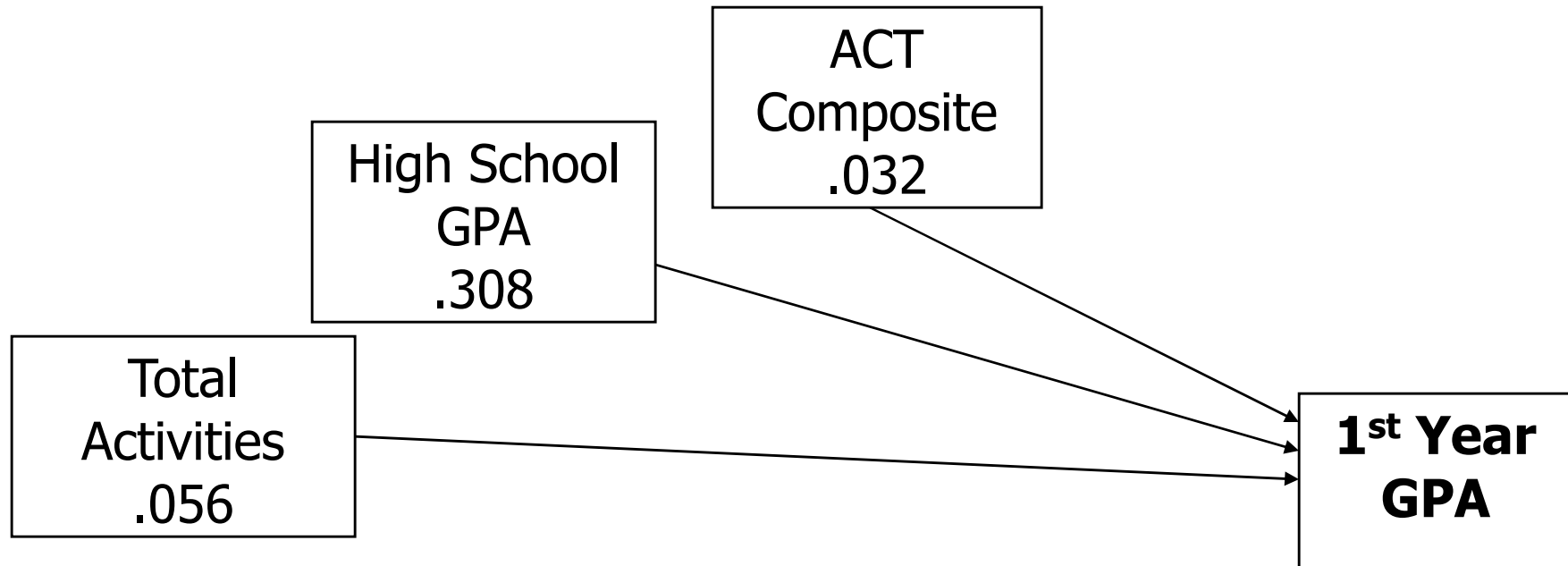
Cognitive + High School Engagement



Average ACT utilized to control for level 2 variance

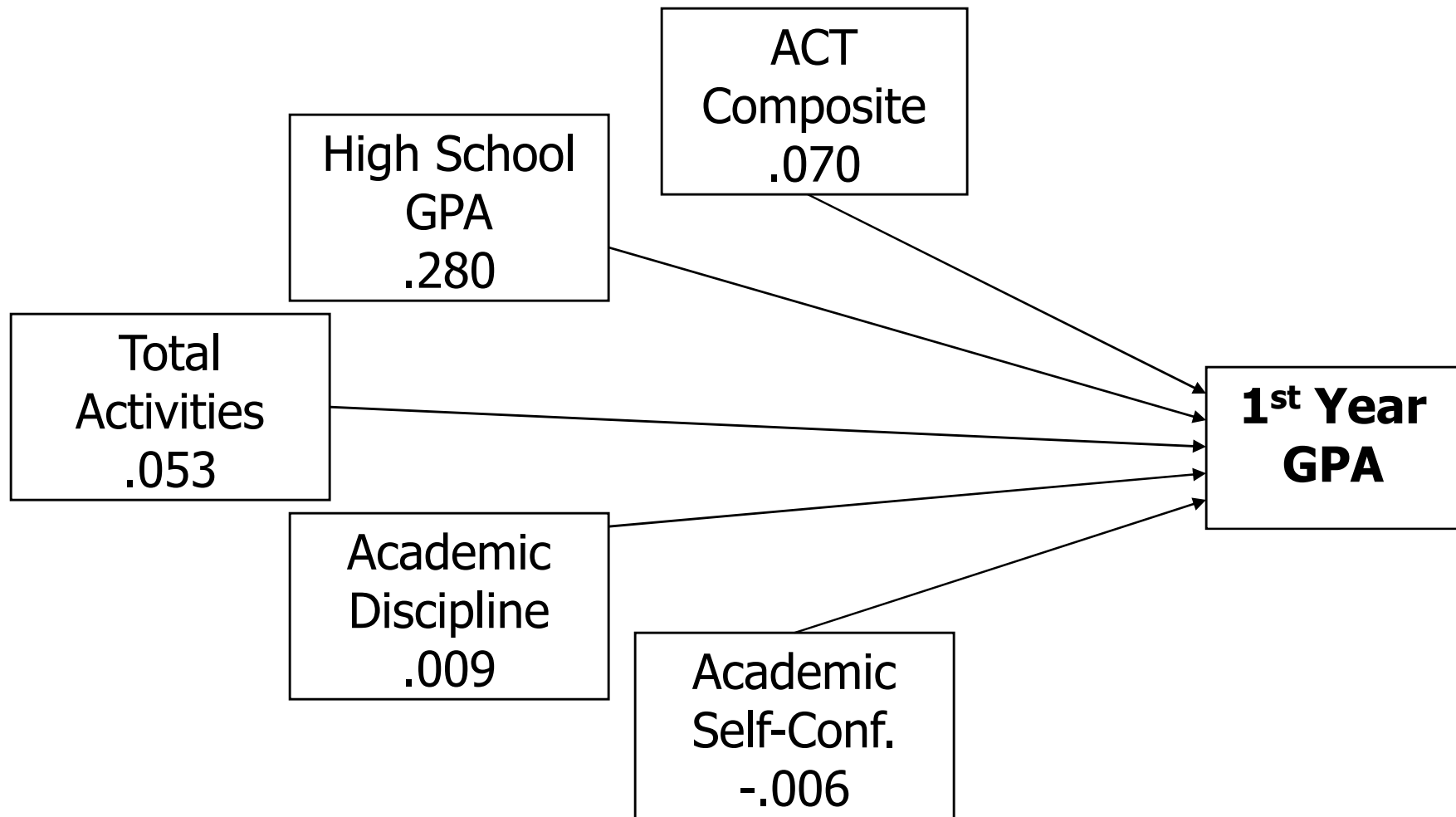
Cognitive + High School Engagement + College Engagement

Cognitive + High School Engagement + College Engagement

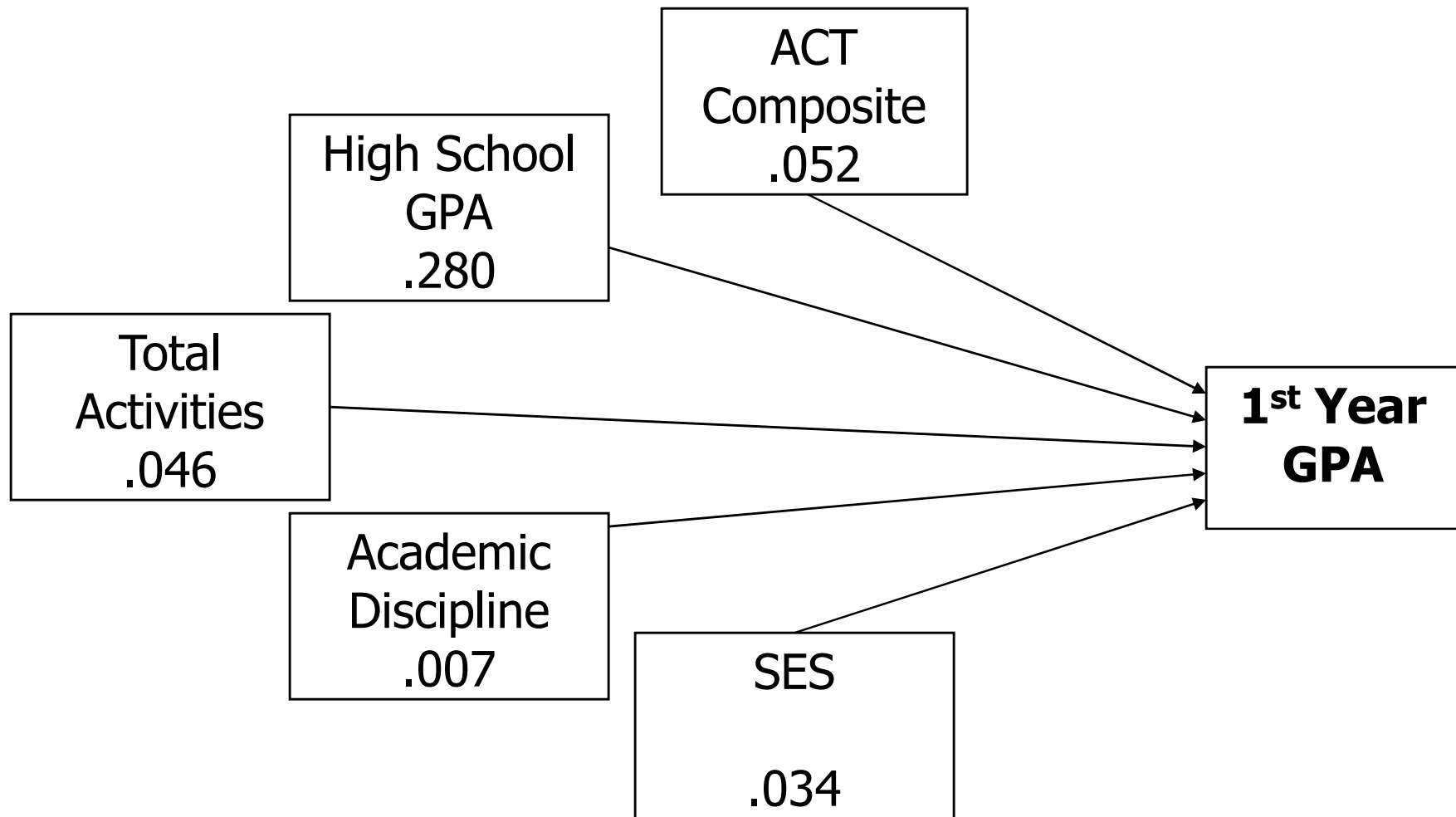


Cognitive + High School Engagement + Noncognitive

Cognitive + High School Engagement + Noncognitive



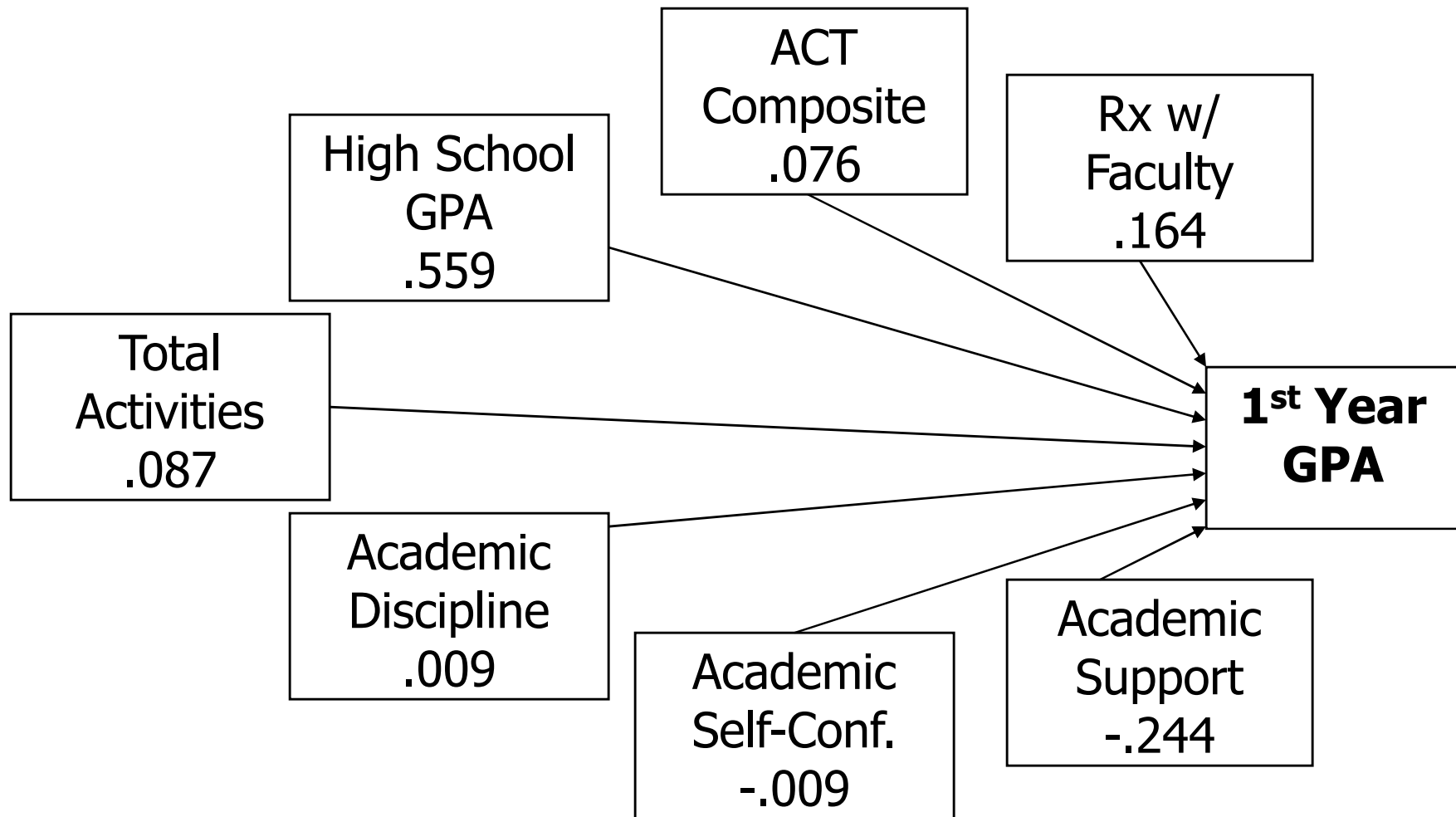
Cognitive + High School Engagement + Noncognitive + Sociodemographic



Cognitive + High School Engagement + Noncognitive +College Engagement

N.B.: Only subset of data from one institution utilized for full model analysis

Cognitive + High School Engagement + Noncognitive + College Engagement



N.B.: Only subset of data from one institution utilized for full final analysis
Sociodemographic variables were not significant

Retention as Outcome

- Statistical tests yielded very low reliability estimates
 - Secondary analysis recognized the following retention group differences:
 - Higher high school GPA and ACT scores for retained
 - Greater high school activities for retained
 - Higher academic discipline and social connection scores for those retained
 - Higher general determination scores for departed
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Interrelationships – Noncognitive and High School Engagement

■ Total Activities:

- ❑ Communication Skills ($r=.163$, $p<.01$)
- ❑ Social Activity ($r=.193$, $p<.01$)
- ❑ Social Connection ($r=.211$, $p<.01$)

■ Total Accomplishments:

- ❑ Study Skills ($r=.139$, $p<.01$)
 - ❑ Communication Skills ($r=.153$, $p<.01$)
 - ❑ Social Activity ($r=.139$, $p<.01$)
 - ❑ Social Connection ($r=.169$, $p<.01$)
 - ❑ Academic Self-Confidence ($r=.104$, $p<.05$)
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Interrelationships – Noncognitive and High School Engagement

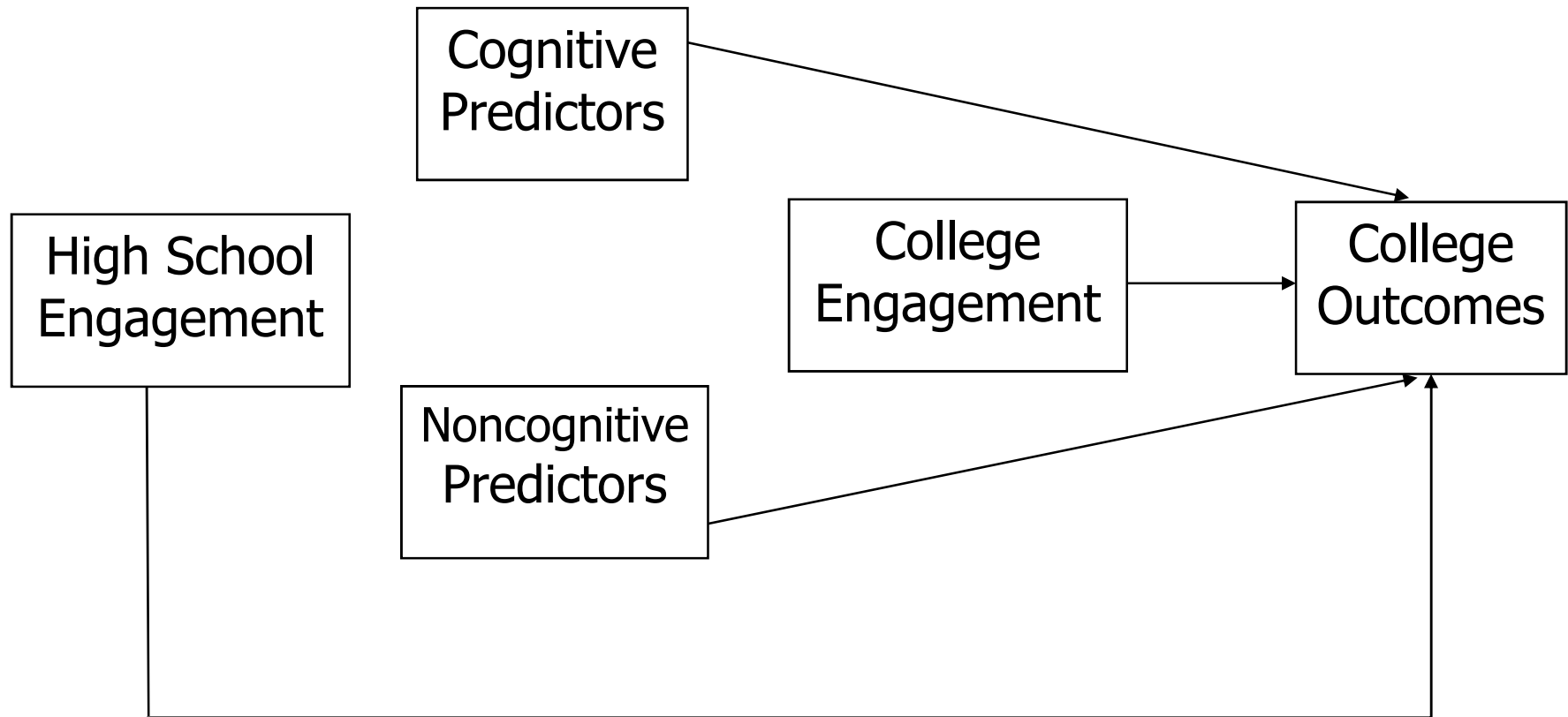
- Accomplishments in Athletics:
 - ❑ Social Activity ($r=.177, p<.01$)
 - ❑ Social Connection ($r=.136, p<.01$)
 - Accomplishments in Writing:
 - ❑ Goal Striving ($r=.107, p<.05$)
 - ❑ Academic Discipline ($r=.121, p<.05$)
 - ❑ General Determination ($r=.134, p<.01$)
 - ❑ Study Skills ($r=.141, p<.01$)
 - ❑ Communication Skills ($r=.138, p<.01$)
 - ❑ Academic Self-Confidence ($r=.121, p<.05$)
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Future Directions

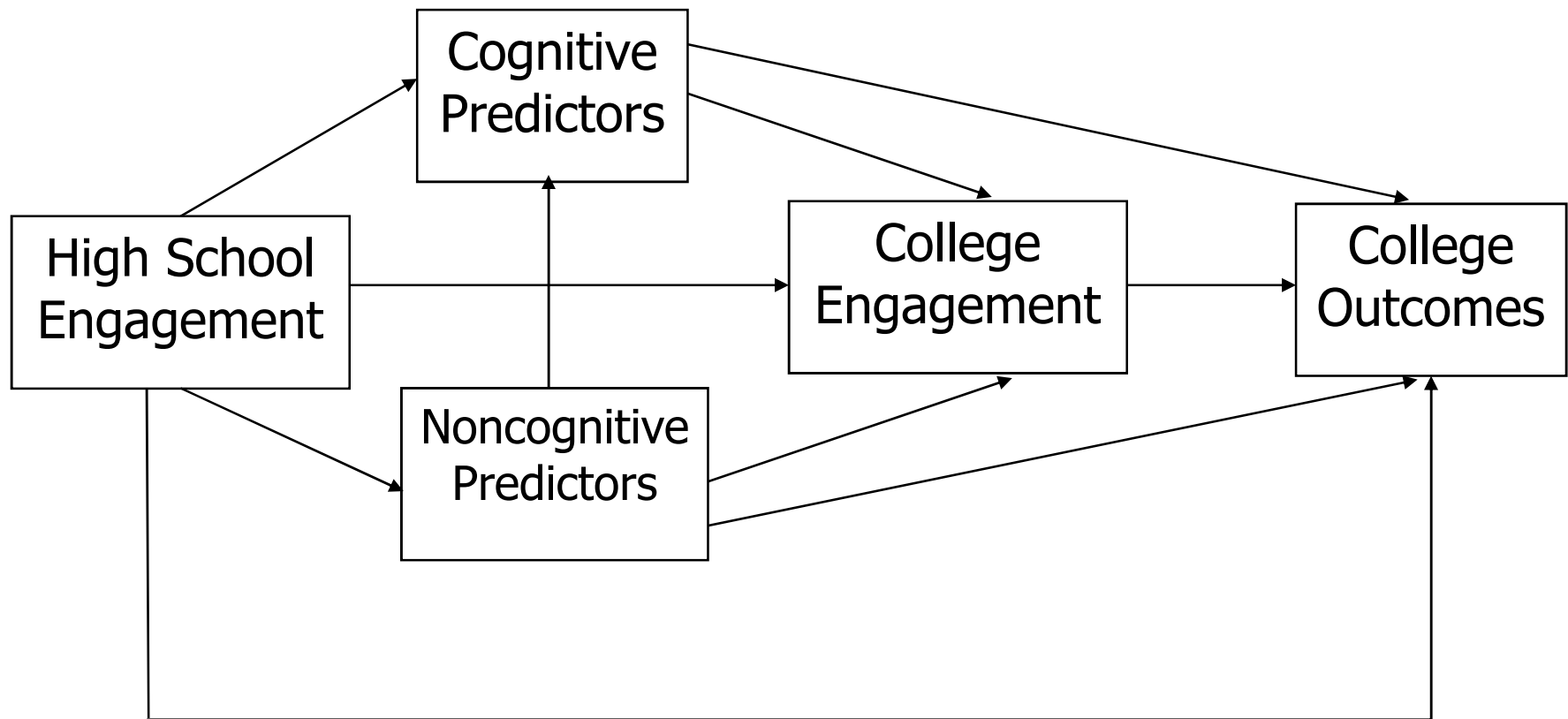
Ongoing Research Recommendations

- Expand analysis to test additional college student outcomes
 - 1st to 2nd year retention
 - 2nd year GPA
 - 4th year GPA
 - Graduation
- Replicate with data from additional institutions
- Addition of more sociodemographic variables
- Further modeling of partial and full mediation

College Student Success – Conceptual Model of Prediction



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- Further modeling of partial and full mediation
- Interrelationships
 - High school and college engagement
 - Between individual predictor variables

Questions?

Complete Results

For an electronic copy of the complete written results of this project, please contact:

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