Effects of Academic Preparation, Motivation, and Interest-Major Congruence on First-Year Academic Performance and Timely Degree Attainment at Two- and Four-Year Institutions

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Outline

• Background and purpose of the study
• Research data and design
• Study results
• Conclusions
• Implications
• Future research
Background

• Few U.S. college students complete degrees in timely fashion
  – Six-year degree completion rates
    • 58% for students entering 4-year institution
    • 38% for students entering 2-year institution
• Many new students ill-prepared for college
• Timely degree attainment - important outcome
  – Financial well-being
  – Equality of postsecondary access
Prior Research

• Significance of first-year academic performance on longer-term college success

• Other factors related to longer-term college success
  – Academic preparation
  – Motivation
  – Interest-major congruence

• Few studies included all these factors
Purpose of the Study

To examine the simultaneous effects of academic preparation, motivation, and interest-major congruence on first-year academic performance and timely degree attainment.
Study Data

• 3,860 ACT-tested students; fall 2003 first-time, full-time, degree-seeking college students

• College outcomes
  – Cumulative GPA, credit hours earned, enrollment status, and academic major

• Degree data supplemented with data from National Student Clearinghouse
Study Data (cont.)

• 15 four-year institutions:
  – Minimum four years of follow-up data
  – 3,072 students
  – 80% “traditional” admissions policies

• 13 two-year institutions:
  – Minimum two years of follow-up data
  – 788 students
  – All open/liberal admissions policies
Study Outcomes

• First-year academic performance
  – Measured by first-year college cumulative GPA

• Timely degree completion
  – Bachelor’s degree within four years
  – Associate’s degree or Certificate within two years
Instruments and Measures

• Interest-major congruence
  – UNIACT Interest Inventory
    • Completed as part of ACT registration
    • Six basic types of vocational interests (correspond to interest types in Holland’s theory of careers)
  – Holland-type major profile
    • Developed in separate study
    • Students grouped by academic major (using CIP codes)
    • Averages of six UNIACT scores for students in major
  – Correlation between individual interest inventory scores and major profile
Instruments and Measures (cont.)

• Motivation
  – Academic Discipline score from Student Readiness Inventory (SRI)
  – SRI completed prior to or within first six weeks of Fall 2003 semester

• Academic preparation
  – Pre-college educational achievement (ACT Composite score)
  – Pre-college academic performance (self-report HSGPA)
Instruments and Measures (cont.)

• Sociodemographic measures
  – Collected when students took the SRI
  – Gender
  – Race/ethnicity
  – Parental income
  – Parental highest education level
    • First generation student
Methodology

• Path models
  – By institutional type
  – Accounted for students nested within initial institution
  – Corrected for measurement error
  – Fit using WinBUGS software
## Results – Student Characteristics
(Average/Percentage)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>4-year</th>
<th>2-year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sociodemographic characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>60%</td>
<td>56%</td>
</tr>
<tr>
<td>Minority</td>
<td>19%</td>
<td>13%</td>
</tr>
<tr>
<td>White</td>
<td>76%</td>
<td>84%</td>
</tr>
<tr>
<td>First generation</td>
<td>45%</td>
<td>58%</td>
</tr>
<tr>
<td><strong>Academic preparation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACT Composite</td>
<td>21.2</td>
<td>18.8</td>
</tr>
<tr>
<td>HSGPA</td>
<td>3.31</td>
<td>2.86</td>
</tr>
<tr>
<td><strong>College outcomes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First-year GPA</td>
<td>2.73</td>
<td>2.47</td>
</tr>
<tr>
<td>Timely degree completion</td>
<td>33%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Minority includes African American and Hispanic students.
Results – Path Model

Interest-Major Congruence

Motivation

Pre-college educational achievement

Pre-college academic performance

First generation

Family income

Male gender

African American/Minority

First-year Academic Performance

Timely Degree Attainment

Weights for estimated paths: 4-year, 2-year
Significant paths are marked with an asterisk (*)
Results – First-Year Academic Performance

- First-year academic performance influenced by:
  - Motivation (+)
  - Pre-college educational achievement (+)
  - Pre-college academic performance (+)
  - Sociodemographic factors (first three significant for 4-year sample only)
    - First generation students (-)
    - Male gender (-)
    - African American students (-)
    - Family income (+)
  - Not influenced by interest-major congruence
Results – Timely Degree Attainment

• Timely degree attainment influenced by:
  – First-year academic performance (+; largest effect)
  – Interest-major congruence (+)
  – Sociodemographic factors (first two significant for four-year sample only)
    • First generation (-)
    • Male gender (-)
    • Race/ethnicity and family income indirectly, not directly
  – Motivation indirect effect only
Conclusions

• Hypothesis 1: Interest-major congruence has direct effect on first-year academic performance – not supported.
  – Unexpected finding
  – Conflicts with past research

• Hypothesis 2: Interest-major congruence has direct effect on timely degree completion – supported.
  – Consistent with broader workplace literature
  – Two hypothesized mechanisms
    • Persistence in college major
    • Enthusiasm for coursework
Conclusions (cont.)

• Hypothesis 3: Motivation has direct effect on timely degree completion – not supported.
  – Indirect effect via first-year academic performance

• Hypothesis 4: Effects of sociodemographic characteristics persist beyond first-year academic performance – partially supported.
  – First generation and male students
Conclusions (cont.)

- Effect of first-year academic performance on timely degree attainment
  - Consistent with prior research on longer-term college success
  - Students need to be prepared for their first-year college coursework
  - Importance of high school academic preparation
Implications of Research

• Importance of effective career and educational planning
  – Benefits of
    • Actively promote timely degree completion
    • Greater exploration of academic major choices
  – Interest-major correlations as useful counseling tool
    • Incorporated into Student Affairs programs
    • Used in middle and/or high school as students begin to explore majors and careers
Implications of Research (cont.)

- Retention efforts - incorporate approaches that promote academic success through both academic and motivational strategies
  - Academic skills are critical
  - Measure psychosocial factors (e.g., motivation) to identify at-risk students
  - Academic Discipline measures motivational traits and skills
    - Improves with proper training and practice
- Programs geared toward first-generation students continue after freshman year
Study Limitations

• Limited sample size for two-year institutions
  – Generalizability to all two-year entrants nationwide

• Reciprocal development of interests and motivation not addressed
  – Individual interest vs. situational interest
  – Later measure of motivation
Future Research

Investigate:

• Whether study results invariant across student subgroups (moderator analyses)

• Critical components of training that improve students’ motivational skills
  – Overcome boredom and frustration
  – Manage multiple deadlines

• What works in promoting postsecondary success across the education pipeline
Selected References


