The Impact of First-Year Seminars on College Students’ Need for Cognition

Ryan D. Padgett
Jennifer R. Keup

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Background

“The freshman seminar is a course intended to enhance the academic and/or social integration of first-year students by introducing them:

• to a variety of specific topics, which vary by seminar type [6 types],
• to essential skills for college success, and
• to selected processes, the most common of which is the creation of a peer support group.”

(Barefoot, 1992)
Background

- Evidence of first-year seminars (FYS) can be found as early as 1880s but experienced a “renaissance” in 1970s around retention
- National data indicate pervasive use (Policy Center on the First Year of College, 2002; Tobolowsky & Associates, 2008)
  - 94% of 4-year institutions offer a FYS
  - Half offer a FYS to 90% of more first-year students
  - Growing use among 2-year colleges
- Evolution in type, structural characteristics, & content
Previous Research: Findings

• Positive impact on retention to second year, persistence to graduation, and academic performance
  – Consistent across gender, residential status, race/ethnicity, and major

• Positive effect on behavioral outcomes
  – Involvement in campus activities
  – Interaction with faculty & peers
  – Student engagement

• FYS faculty development also linked to improved teaching performance
Previous Research: Limitations

• Little research on the relationship between FYS and more complex developmental outcomes
• Reliance upon single-institution studies
• Few controls of potentially-biasing background characteristics
• Pathways of influence have not yet been fully explored
Research Questions

• What is the total effect of first-year seminars on first-year students’ need for cognition net of precollege and background characteristics?

• What are the direct and indirect effects of first-year seminars on first-year students’ need for cognition net of precollege and background characteristics?
Wabash National Study of Liberal Arts Education

• A longitudinal study investigating the effects of the liberal arts experience on a series of cognitive and psychosocial outcomes associated with undergraduate education
  – Student-level data from 48 college and universities that participated in the WNS in 2006, 2007, and 2008
  – We restricted our analytic sample to four-year institutions (n = 45)
  – First-year, full-time undergraduates
Data Collection

• Initial data collection in early fall (T1)
  – Precollege survey & cognitive, psychosocial, and personal development instruments

• Follow-up collection in late spring (T2)
  – NSSE student survey and the WNS Student Experiences Survey
  – Cognitive, psychosocial, and personal development instruments
Dependent Measure

• The Need for Cognition (NFC) instrument is an 18-item scale that measures an individual’s desire to engage and seek-out cognitive activity (Cacioppo, Petty, Feinstein, & Jarvis, 1996; Cacioppo, Petty, & Kao, 1984).

• Individuals who measure high on NFC are more likely to seek, acquire, and reflect on information and processes in order to make sense of behaviors, relationships, and experiences in their daily lives (Cacioppo et al., 1996).
# Independent Measures

<table>
<thead>
<tr>
<th>Background Characteristics / Precollege Experiences</th>
<th>Institutional Characteristics</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>Institutional Type - Regional College</td>
</tr>
<tr>
<td>Race - Black</td>
<td>Institutional Type - Research University</td>
</tr>
<tr>
<td>Race - Hispanic</td>
<td>College Experiences</td>
</tr>
<tr>
<td>Race - Asian</td>
<td>College Grades</td>
</tr>
<tr>
<td>Parents' Total Education</td>
<td>Live On-Campus</td>
</tr>
<tr>
<td>Total Income</td>
<td>Hours Worked per Week in College</td>
</tr>
<tr>
<td>ACT Composite Score</td>
<td>Courses Taken in the Liberal Arts</td>
</tr>
<tr>
<td>Teacher Interaction in High School</td>
<td>Participated in First-Year Seminar</td>
</tr>
<tr>
<td>Studied with Friends in High School</td>
<td>Good Practices</td>
</tr>
<tr>
<td>Academic Motivation</td>
<td>Frequency of Interactions with Faculty</td>
</tr>
<tr>
<td>Degree Aspirations</td>
<td>Degree of Positive Peer Interactions</td>
</tr>
<tr>
<td>Pretest Need for Cognition</td>
<td>Integrated Ideas, Information, and Experiences</td>
</tr>
<tr>
<td></td>
<td>Academic Challenge</td>
</tr>
<tr>
<td></td>
<td>Diversity Experiences</td>
</tr>
</tbody>
</table>
Analysis and Design Effect

- A series of ordinary least squares (OLS) regressions
- Follow-up data was weighted up to each institution’s first-year undergraduate population by sex, race, and ACT score
- Accounted for the nested nature of the data
- Did not utilize propensity score matching
  - Weighted, multivariate OLS that control for a pretest measure and the clustering effect provide a more conservative and accurate measure of the selection variable compared to propensity score matching
### Significant Results - NFC

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total Effect</th>
<th>SE</th>
<th>Direct Effect</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participated in First-Year Seminar</td>
<td>0.08**</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>College Grades</td>
<td>0.07***</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses Taken in the Liberal Arts</td>
<td>0.02*</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good Practices</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of Interactions with Faculty</td>
<td>-0.03</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of Positive Peer Interactions</td>
<td>-0.01</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated Ideas, Information, and Experiences</td>
<td>0.13***</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Challenge</td>
<td>0.05**</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diversity Experiences</td>
<td>0.04</td>
<td>0.02</td>
<td></td>
<td></td>
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<tr>
<td>$R^2$</td>
<td>0.56</td>
<td>0.59</td>
<td></td>
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</tbody>
</table>

* p < 0.05, ** p < 0.01, *** p < 0.001
Results cont.

<table>
<thead>
<tr>
<th>Effect Mediated Through</th>
<th>Estimated Indirect Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Ideas, Information, and Experiences</td>
<td>0.025***</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
</tr>
<tr>
<td>Academic Challenge and Effort</td>
<td>0.008*</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
</tr>
</tbody>
</table>

* p < 0.05, ** p < 0.01, *** p < 0.001  (Sobel test)
Discussion and Implications

• First-year seminars enhance students’ development of overall motivation to inquire
  – Moves beyond retention and academic achievement
  – Can be an intentional educational practice to advance inquiry learning

• Potential to create buy-in and increase involvement from faculty in first-year seminars, attract new students into seminars, and enhance the fit of these courses with institutional, college, or departmental goals
Discussion and Implications

• Legitimization of first-year seminars as a vehicle for enhancing students’ integration of ideas, information, and experiences & academic challenge and effort

• First-year seminars may be affecting student development across additional cognitive and psychosocial measures

• Pathway of influence may be indirect, which helps identify reasonable program outcomes
Future Directions

• Research on relationship of FYS with other developmental outcomes
• Further examine indirect effects of FYS
• Disaggregation of student populations
• Inclusion of programmatic variables
  – Seminar type & characteristics
  – Pedagogical practices
  – Learning outcomes
Questions? Comments?

Ryan D. Padgett
Assistant Director of Research, Grants, and Assessment
E-mail: rpadgett@mailbox.sc.edu

Jennifer R. Keup
Director
E-mail: keupj@mailbox.sc.edu

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