Psychosocial Factor Modeling and Retention Outcomes: Exploring the Efficacy of Early Intervention

17th Annual National Conference on Students in Transition
Houston, TX
November 15, 2011
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Today’s presentation

• Review an assessment of an intervention
• Designed to increase FTIC success (GPA, academic standing)
• Involved several campus units
  – Colleges and Schools
  – Institutional Research
  – Student Affairs
• Evidence of efficacy

The outline…

• Context for the intervention
  – University of North Texas
  – Organization, student profile
• Psychosocial factors and retention
• The intervention plan
• The predictive model
• The assessment plan
• Results
• Recommendations for Research and Practice
• References
## About UNT

- Main campus – Denton, TX
- Enrollment
  - 36,123 total headcount
  - 23,756 undergraduates
- Moderately selective
  - SAT 1095
  - ACT 23.4
- 11 Colleges/Schools
- Degrees
  - 97 Bachelor’s
  - 101 Master’s
  - 48 Doctoral
- Faculty
  - 988 FT
  - 519 PT
- Median Class Size - 28

## A few more items of interest...

- Gender
  - Female (56.0%)
- Ethnicity
  - White (62.2%)
  - African American (13.2)
  - Latino (12.8)
  - Asian (5.5)
  - Native American (0.7)
  - Non-resident Alien (4.7)
- Over 80% from <100 mi
- 25% Pell eligible
- 49% first-generation
- Students admitted into colleges and schools
- Mandatory two-day summer orientation
- FTIC retention rate – 75.4% (2008 cohort)
- Six-year graduation rate – 45.6% (2002 cohort)

## Psychosocial Factors (PSFs)

- How can we model retention (attrition)?
  - What are ways to predict departure?
  - Multiple regression
  - Re-enrollment as the dependent variable
- Start with fixed attributes
  - Gender
  - Ethnicity
  - Standardized test scores
  - HS class rank/GPA
  - Others?
More on PSFs

• Fixed attributes proved insufficient
• Add attitudinal factors
  – Non-cognitive attributes
  – Often gathered via survey
• Often summarized as the “Big Five”
  – Agreeableness
  – Conscientiousness
  – Extraversion
  – Neuroticism
  – Openness to experience

How to capture PSF data?

• A typical approach...
  – Population assessment
  – Completed at orientation
  – Include unique student identifier (ID number)
• COTS options (Student profile)
  – College Student Inventory (Noel-Levitz)
  – Student Readiness Inventory (ACT)
• Home-grown (e.g. Oklahoma University)

The Intervention Plan

• Survey FTICs at summer Orientation
  – 8 sessions
  – Approximately 450 students per session
• Use our nascent predictive model to select at-risk students for follow up (first six weeks of fall)
• Deploy academic advisors and student affairs staff to individually intervene
• Frame the intervention around a discussion of the assessment results
We used the SRI

- Pencil and paper survey
- 108 items
- Approximately 30 minutes to complete
- Economical
- Student reports on pdf.
- Excel file of individual student scores
- Results across 10 domains

The 10 Domains

- Academic discipline — I turn in my assignments on time
- Academic self-confidence — I am a fast learner
- Commitment to college — I’m motivated to get a college degree
- Communication skills — In reaching an agreement, I consider the needs of others as well as my own needs
- General determination — When I make plans, I follow through with them

The 10 Domains (more)

- Goal striving — I strive to achieve the goals I set for myself
- Social activity — I make friends easily
- Social connection — I have a sense of belonging when I’m on campus
- Steadiness — I’m a patient person
- Study skills — I highlight key points when I read assigned materials
Sample SRI Student Report

- Normalized scores
- Percentiles based on ACT norms
- Strengths
  - > 75th percentile
- Cultivate your skills
  - between 24th and 74th percentile
- Plan for improvement
  - < 25th percentile

The Treatment

- One-on-one, face-to-face meeting
- Discuss one strength and one area of improvement
- Validate the results
  - But...
  - The results aren’t the point
  - The relationship is the point
- Refer to campus resources

Training

- SRI Users Guide
- Supporting literature
- Resource crosswalk
  - Campus resources
  - Organized by domain
- Role plays based on domain scenarios
- Handout (last page)
The Predictive Model
(how we selected the students)

• The Foundation
  – Title III, proactive intervention, and the SRI
• Methodology
  – Logistic regression: 1-year retention
  – 3 Years of historical data
  – Pre-enrollment variables
  – Predicted probability scores
• Intervention for students that need it the most.

The Predictive Model
(how we selected the students)

• 5th Quintile- 68.9%
• 4th Quintile- 72.8%
• 3rd Quintile- 76%
• 2nd Quintile- 80.6%
• 1st Quintile- 81.5%

The Assessment Plan

• Statistics
  – T-Tests
  – Logistic Regression
  – Nearest Neighbor Matching
• Rationale
  – Convergence
  – Reliability
The Assessment Plan: T-Test Results

- Academic Discipline Scale
  - Relevancy of the instrument
  - Significant
- The Treatment: Academic Standing
  - Relevancy of the treatment
  - Significant
- The Treatment: First Semester GPA
  - Relevancy of the treatment
  - Not Significant

The Assessment Plan: Regression Results

- Independent Variables
  - Standardized Test Scores
  - Course Load
  - Undetermined Status
  - Ethnicity
  - Percentile
  - Age
  - Sex
  - Treatment
- The treatment was not a significant predictor of academic standing.
- To this point, T-Tests & Regression have given mixed results regarding the efficacy of the intervention.

The Assessment Plan: Matching

- Pseudo-Experimental Design
  - Non-random assignment of treatment and control group classifications
  - Implications of a non-random sample
- Confounding variables & Selection Bias
  - Willingness to respond
  - Advisor conducting the interventions
  - Model Misspecification
  - Mindset
The Assessment Plan: Matching cont.

- Nearest Neighbor Matching
  - Likelihood of assignment into the treatment or control group
  - Propensity Score Method
- The rationale for matching
  - Appropriate for observational data (non-randomly assigned)
  - Controls for inherent differences between the control & treatment group.
  - Displays the “true” effect of the treatment or intervention.

Results (so, what happened?)

<table>
<thead>
<tr>
<th>Experimental Group Characteristics</th>
<th>Efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment group (n=160)</td>
<td></td>
</tr>
<tr>
<td>Control group (n=262)</td>
<td></td>
</tr>
<tr>
<td>37.9% of student self-selected</td>
<td></td>
</tr>
</tbody>
</table>

- Semester GPA
  - No statistically significant difference
- Unmatched results
  - 74% of treatment group in good standing vs. 53% in the control group.
- Matched results
  - 74% of treatment group in good standing vs. 57% in the control group.
  - T-Statistic = 2.03 (95% significance level)

Final Assessment

- The SRI can equip students with relevant and useful information.
- Predicted probability scores can be used to better identify “at-risk” populations.
- SRI interventions with targeted/at-risk student populations appear to contribute to a higher % remaining in good standing (GPA ≥ 2.0).
Recommendations (things to work on)

• Include the SRI scores in the predictive model
• Capture and include whether the student followed up on the advisor’s recommendation
• Investigate the validity issues associated with the timing of data collection
  – When’s the best time to ask a student about their study skills?
• Figure out how to increase the intervention rate

Selected References