Modeling the Effects of Student-Centeredness on Student Outcomes

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MODELING THE EFFECTS OF STUDENT-CENTEREDNESS ON STUDENT OUTCOMES

SELF-DETERMINATION THEORY CONFERENCE
VICTORIA, BC

Dr. Emily Bonem
Purdue University
ACKNOWLEDGEMENTS

Center for Instructional Excellence

- Chantal Levesque-Bristol
- David Nelson
- Heather Fedesco
- Kiki Zissimopoulos
- Yu Shi
- Cong (Vivi) Wang
Course Redesign Models

- Supplemental
- Replacement
- Flipped
- Hybrid
- Online

No “right” model
Students in student-centered courses tend to:

• Become more motivated and more satisfied with their educational resources (e.g. Slavin, 1990; Johnson, 1991)

• Be able to apply knowledge during problem-solving and real-life situations (Fink, 2003)

• Accept responsibility and become more actively engaged in their learning (Lambert & McCombs, 2000)
When Basic Psychological Needs are met:

- Increased classroom engagement (Roorda, Koomen, & Spilt, 2011)
- Student well-being (Adie, Duda, & Ntoumanis, 2008)
- Perceived skill development (Cheon, Reeve, & Moon, 2012)
- Future intentions of using skills (Cheon, Reeve, & Moon, 2012)
- Student motivation (Tessier, Sarrazin, & ntoumanis, 2010)
**Self-determined Motivation**
- Intrinsic Motivation
- Integration
- Identification

**Non-self-determined Motivation**
- Introjection
- Extrinsic Motivation
- Amotivation

Strong positive relationship between self-determined student motivation and academic achievement *(for a meta-analysis see Taylor et al., 2014)*
Instruction Matters: Purdue Academic Course Transformation (IMPACT) Program

- Semester-long course redesign program
- Theoretical framework based on SDT
- Overarching goal is to create student-centered, autonomy supportive learning environments
RESEARCH PURPOSE

Test principles of SDT in a large, diverse sample of courses and students

Investigate how our model fits specific populations, particularly disadvantaged students
THEORETICAL MODEL

- Competence
- SDI
- SALG
- PKTS

Diagram showing relationships between Competence, SDI, SALG, and PKTS.
Data collected across three semesters: Spring 2014, Fall 2014, Spring 2015

109 Total Courses (697 Course Sections)
• 56% STEM, 44% non-STEM
COURSES – BY COLLEGE

- College of Agriculture
- College of Education
- College of Engineering
- College of Health & Human Sci
- College of Liberal Arts
- College of Science
- College of Technology
- Krannert School of Management
- The Graduate School
COURSES – BY LEVEL

- 100 Level
- 200 Level
- 300 Level
- 400 Level
- 500 Level
## STUDENT DEMOGRAPHIC DATA

<table>
<thead>
<tr>
<th>All students over 18 enrolled in redesigned courses (N = 47,021)</th>
<th>Students who completed all measures (N = 8,510)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong> &lt;br&gt;41% Female, 59% Male</td>
<td><strong>Gender</strong> &lt;br&gt;50% Female, 50% Male</td>
</tr>
<tr>
<td><strong>Ethnicity</strong> &lt;br&gt;64% White, 19% International, 6% Asian, 3% Black/African-American, 4% Latino/Hispanic, 4% Other</td>
<td>67% White, 19% International, 4% Asian, 2% Black/African-American, 4% Latino/Hispanic, 4% Other</td>
</tr>
<tr>
<td><strong>Underrepresented Minority</strong> &lt;br&gt;8.6% underrepresented minority</td>
<td>7.4% underrepresented minority</td>
</tr>
<tr>
<td><strong>Class Level</strong> &lt;br&gt;28% Freshmen, 34% Sophomores, 21% Juniors, 16% Seniors, 1% Graduate Students</td>
<td>30% Freshmen, 30% Sophomores, 22% Juniors, 17% Seniors, 1% Graduate Students</td>
</tr>
<tr>
<td><strong>Course Grade</strong> &lt;br&gt;(M=3.07, SD=1.04)</td>
<td><strong>Course Grade</strong> &lt;br&gt;(M=3.39, SD=0.81)</td>
</tr>
<tr>
<td>Variable</td>
<td>Reliability</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Learning Climate</td>
<td>6 items; α=.95</td>
</tr>
<tr>
<td>Autonomy</td>
<td>7 items; α=.76</td>
</tr>
<tr>
<td>Competence</td>
<td>6 items; α=.78</td>
</tr>
<tr>
<td>Relatedness</td>
<td>8 items; α=.86</td>
</tr>
<tr>
<td>Self-Determination Index</td>
<td>18 items; α=.81-.95</td>
</tr>
<tr>
<td>Perceived Knowledge Transfer Scale (PKTS)</td>
<td>8 items; α=.97</td>
</tr>
<tr>
<td>Student Assessment of Learning Gains (SALG)</td>
<td>3 items; α=.93</td>
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Perceived Knowledge Transfer Scale
– developed by Levesque-Bristol, Richards, Zissimopoulos, Wang & Yu (under review)

“I feel confident in my ability to apply the course material in other classes that I have”

“I understand how I will use the information learned in this class in my professional life”
Student Assessment of Learning Gains
– created based on learning outcomes provided by the instructor

“As a result of your work in this class, what GAINS did you make in the SKILL of…….”
Levesque-Bristol, C. et al. (under review). Using self-determination theory to model the effects of autonomy-support on student outcomes across a variety of disciplines.
Tertiary split to define three groups:

<table>
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<th>Group</th>
<th>N</th>
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<th>M, SD</th>
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<tr>
<td>Low SAT group</td>
<td>2609</td>
<td>570-1110</td>
<td>1023.82, 72.26</td>
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<td>Mid SAT group</td>
<td>2417</td>
<td>1120-1250</td>
<td>1185.41, 36.59</td>
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<td>2525</td>
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Low SAT group

High SAT group

LCQ → Autonomy

Autonomy → Competence

Competence → Relatedness

Relatedness → Autonomy

Autonomy → SDI

SDI → SALG

SALG → PKTS

PKTS → SALG

SALG → SDI

SDI → PKTS

- .77**
- .83**
- .06
- .05
- .53**
- .55**
- .02
- .15**
- .85**
- .60**
- .06
- .05
- .53**
- .55**
- .02
- .15**
- .83**
- .82**
- .30**
- .23**
- .45**
- .46**
- .45**
- .46**
- .79**
- .66**
- .22**
- .63**
- .57**
- .22**
- .22**
- .22**
- .22**
Results of our study support the hypothesized model based on SDT in higher education across 109 courses in 9 different colleges at Purdue.

Course redesign programs should focus on creating student-centered learning environments.

The benefits of an autonomy-supportive learning environment are even greater for academically disadvantaged students.
Examine the model in other populations

- STEM vs. non-STEM
- Women vs. Men
- Underrepresented Minorities
- International students
Thank you!

Questions?