Factors Influencing Students’ Choice to Major in Agriculture

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Introduction & Need for the Study

- Between 2015 and 2020, an average of 57,900 agriculturally related job openings each year - only an average of 35,400 college graduates with expertise to fill those positions (Goecker, Smith, Fernandez, Ali, & Theller, 2015).

- Approximately one-third of jobs available in agriculture will be filled by individuals not trained in agriculture (Zoldoske, 1996).

- Research is needed to understand how to secure well-trained professionals in the area of agriculture and applied sciences. It is important to understand what attracts individuals to study agriculture on a collegiate level.

Outcome expectations, self-efficacy, and personal goals are the three main cognitive functions that mold career selection in the Social Cognitive Career Theory (Lent, Brown, & Hackett, 2002; Lent, 2005).

Personal goals are defined as “one’s intentions to engage in certain activity or to generate a particular outcome” (Lent, 2005).

Primary learning experiences that shape an individuals' self-efficacy expectations: personal performance accomplishments, social persuasion, vicarious learning, and physiological and affective states (Bandura, 1977; Borgen & Harmon, 1996).

Dick and Rallis (1991) provide inputs for self concept and career values:

- **Cultural Milieu**
- **Socializers**
- **Past Experiences**
Theoretical Framework
Model of Career Choice
(Dick & Rallis, 1991)

- **Student Aptitudes**
  - **Socializers**
    - Attitudes and behaviors of mother, father, teacher, counselor, friend, others
  - **Past Experiences**
    - Grades, test scores, related experiences
  - **Cultural Milieu**
    - Sex division in the labor market, cultural stereotypes

- **Perceptions of Socializers**
- **Interpretation of Experiences**
- **Self Concept and Career Values**
  - Interests and abilities, salary expectations, cost and length of training

- **Choice of Career**
Literature Review

- **Cultural milieu**
  - Cultural background influences both career decision-making style and career decision-making self-efficacy of the student (Mau, 2000).

- **Socializers**
  - Parents influence student attitudes related to their abilities (Parsons, Adler, & Kaczala, 1982).
  - Students that perceived themselves as more able in math and science also reported a higher amount of social support in the subject areas of math and science (Rice, Barth, Guadagno, Smith, & McCallum, 2012).

- **Past experiences**
  - Internships were found to lead to career-oriented employment (Callanan & Benzing, 2004).
Conceptual Framework
Model of Career Choice
(Dick & Rallis, 1991)

- Context/Behaviors
- Cultural Milieu
- Socializers
- Self Concept and Career Values
- Past Experiences
- Past Experiences (Courses)

Choice of Career
Purpose and Research Objectives

1. Describe the behaviors and attitudes of students in choosing a major in agriculture (when, major change, confidence in decision).

2. Describe the factors (socializers, past experiences, self concept, career values) influencing students’ choice in major in agriculture.

Purpose:

- Determine the factors influencing students’ decision to major in agriculture
Participants & Data Collection

- Quantitative Survey Methods
- Initial population of approximately 1800 students
- Random sample of 580 students in the College of Agriculture and Applied Sciences during Spring 2016 semester provided by Dean’s office
- Dillman’s (2007) Tailored Design Methods
- 284 usable surveys were collected, 48.96% response rate
The survey was researcher developed, based on Dick and Rallis’ (1991) survey. Consisted of questions related to:

- **Context/Behaviors**: 5 Items
- **Cultural Milieu**: 1 Item
- **Socializers**: 6 Item
- **Self Concept and Career Values**: 4 Item
- **Past Experiences**: 2 Item
- **Past Experiences (Courses)**: 3 Item

Statements set on a 6-point scale of 1 (*strongly disagree*) to 6 (*strongly agree*)

Content and Face Validity by a panel of experts in College of Agriculture and Applied Sciences at USU

Instrument reliability: Pilot test (Cronbach’s $\alpha = .85$) and post-hoc (Cronbach’s $\alpha = .88$)
Data Analysis

- Checked for response bias and found none

- Descriptive and correlational analysis (frequency and percentages, t-tests, and correlations)
  - Intention to pursue a career that matches their major = Choice of Career

- Aggregated data into agree and disagree for ease of reporting and analysis
Participants overwhelmingly felt their major was preparing them for their future career (97% agree) and were confident in the job opportunities available in the field of their current major (94% agree).
Have you ever changed your major? (Yes/No)
- $t(276) = -1.968, p = .050$
- Cohen’s $d = .24$, small effect size
  - Those that change their major are less likely to pursue a career matching their current major in agriculture.

Did you begin college with a major in the College of Agriculture and Applied Sciences? (Yes/No)
- $t(276) = .621, p = .245$
- Not significant

When did you decide on your current major within the College of Agriculture and Applied Sciences? (ANOVA)
- $F(8, 269) = 1.757, p = .086$
- Not significant
Cultural Milieu
Level of Agreement

My parents’ profession greatly influenced my college major decision.

Agree 42%
Disagree 58%
Cultural Milieu

<table>
<thead>
<tr>
<th>Correlations</th>
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<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>1. I plan on pursuing a career that matches my current major.</td>
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<tr>
<td>2. My parents’ profession greatly influenced my college major decision.</td>
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**Summary:** Parent’s profession was not statistically significant in influencing the student’s choice to pursue a career that matches their major in the College of Agriculture and Applied Sciences.
Socializers
Level of Agreement

Most Influential in Students’ Choice of Major

<table>
<thead>
<tr>
<th>Socializer</th>
<th>Percentage of Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>53%</td>
</tr>
<tr>
<td>High School Teacher</td>
<td>34%</td>
</tr>
<tr>
<td>Family Member</td>
<td>33%</td>
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<tr>
<td>Friend</td>
<td>31%</td>
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<tr>
<td>Guidance Counselor</td>
<td>17%</td>
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<tr>
<td>Coach</td>
<td>11%</td>
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Socializer Significance

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<tr>
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<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1. I plan on pursuing a career that matches my current major.</td>
<td>1</td>
</tr>
<tr>
<td>2. A parent greatly influenced my college major decision.</td>
<td>-.084</td>
</tr>
<tr>
<td>3. A friend greatly influenced my college major decision.</td>
<td>-.110</td>
</tr>
<tr>
<td>4. Another family member (besides a parent) greatly influenced my college major decision.</td>
<td>-.129*</td>
</tr>
<tr>
<td>5. A teacher in high school greatly influenced my college major decision.</td>
<td>.072</td>
</tr>
<tr>
<td>6. A guidance counselor greatly influenced my college major decision.</td>
<td>-.174**</td>
</tr>
<tr>
<td>7. A coach greatly influenced my college major decision.</td>
<td>-.038</td>
</tr>
</tbody>
</table>

**Summary:** When choice of major was influenced by guidance counselors and other family members, students were significantly less likely to pursue a career that matches their current major in Agriculture.
Self-Concept & Career Values
Level of Agreement

Most Influential in Students’ Choice of Major

Percentage of Agreement

- Own perceived talents: 94%
- Number of job opportunities: 71%
- Advancement opportunities: 63%
- Income opportunities: 59%

Self-Concept & Career Values
## Self-Concept & Career Value Influence on Career Choice

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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>1. I plan on pursuing a career that matches my current major.</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Future income opportunities greatly influenced my college major decision.</td>
<td>-.110</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Future advancement opportunities greatly influenced my college major decision.</td>
<td>-.76</td>
<td>.505**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. The potential number of job opportunities greatly influenced my college major decision.</td>
<td>-.028</td>
<td>.506**</td>
<td>.574**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. My personal talents greatly influenced my college major decision.</td>
<td>.187**</td>
<td>.194**</td>
<td>.201**</td>
<td>.267**</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Summary:** Personal talents and confidence in job opportunities are positive and significant influencers of pursuing a career in agriculture.
Past Experiences
Level of Agreement

Most Influential in Students’ Choice of Major

- Prior Work Experience: 71%
- Internship or Job Placement: 52%

Percentage of Agreement
## Past Experience Influence on Career Choice

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<td>4</td>
</tr>
<tr>
<td>1. I plan on pursuing a career that matches my current major.</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2. An internship or job placement greatly influenced my college major decision.</td>
<td>.031</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3. My prior work experience greatly influenced my college major decision.</td>
<td>.120*</td>
<td>.381**</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### Summary: Prior work experience significantly positively influenced students career pursuit in agriculture.
Past Experience (Course)
Level of Agreement

Most Influential in Students’ Choice of Major

<table>
<thead>
<tr>
<th>Past Experience (Course)</th>
<th>High School Science Courses</th>
<th>Career and Technical Courses</th>
<th>High School Math Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of Agreement</td>
<td>56%</td>
<td>56%</td>
<td>32%</td>
</tr>
</tbody>
</table>
Past Experience (Courses) Influence on Career Choice

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<td>1</td>
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<tr>
<td>1. I plan on pursuing a career that matches my current major.</td>
</tr>
<tr>
<td>2. Science courses I took in high school greatly influenced my college major decision.</td>
</tr>
<tr>
<td>3. Math courses I took in high school greatly influenced my college major decision.</td>
</tr>
<tr>
<td>4. Career and Technical courses (e.g. Business, Agriculture, Family and Consumer Science) I took in high school greatly influenced my college major decision.</td>
</tr>
</tbody>
</table>

Summary: Students who indicated that math courses were influential in their choice of major are significantly less likely to pursue a career based on their major in the College of Agriculture and Applied Sciences.
Conclusions & Implications

Context/Behaviors
- Almost half of students did not decide on major until after being in college and change major at least once
- Consistent with other research (USDE, NCES, 2012)
  - Implications for when to recruit and make yourself available

Socializers
- Parents most influential socializer
  - Implications for high school teachers of agriculture to develop those relationships with parents
Conclusions & Implications

Self Concept and Career Value

- Talents/job opportunities more influential than advancement/income potential
  - Implications for helping students develop and see their talents and matching them to careers (CTE courses), as well as showing students AFNR job opportunities

Past Experiences

- High school CTE and science courses were most influential courses
  - Implications for continuing to promote these at the secondary level
- Prior work experience and internships
  - Implications for high school and college teachers of agriculture to provide work experiences or internship opportunities for students in agriculture
Conclusions

Significant influencers of pursuit of career in agriculture:

- Context/Behaviors
  - Changing major or minor
- Cultural Milieu
- Socializers
  - Another member, guidance counselor
- Self Concept and Career Values
  - Personal talent
- Past Experiences
  - Prior work experience
- Past Experiences (Courses)
  - Math courses
Recommendations for Practice

At the Secondary Level:
- Get more students in science and CTE courses
- High school agriculture teachers should talk more with parents about careers of their students

At the College Level:
- Findings suggest student recruitment efforts should continue well into the students’ college career
  - Message need not be so much about advancement and income potential but more about matching talents and showing the job opportunities in agriculture
- College teachers should provide more internship opportunities for students in agriculture
Recommendations for Research

- Major limitation: surveying college students versus those in the field.
  - Research is needed with those already working in agricultural field to determine which factors equate to career choice

- How do influencing factors vary by specific major or career within agriculture?

- Qualitative research examining how factors influence students in career decisions

- Examine pre-college enrollment factors influencing choice of major as well as after-college major changes and the influencing factors
Thank you
Are there any questions?

Olivia Hile, Graduate Researcher
Michelle Burrows, Graduate Researcher
Tyson Sorensen, Assistant Professor

Contact Olivia Hile at olivia.horning@usu.edu
with any additional questions
Resources

- 52% of math majors switched to another major
- 40% of natural sciences majors switched
- 37% of education majors switched
- 36% of humanities majors switched
- 35% of all STEM majors switched
- 32% of engineering majors switched
- 32% of general studies majors switched
- 31% of social science majors switched
- 31% of business majors switched
- 28% of computer and information sciences majors switched
- 26% of healthcare field majors switched