Evaluating barriers and opportunities addressed by diversity internship programs

A social cognitive analysis

Nia Haynes
University of Florida
Background

- Minorities continue to be underrepresented in natural resource careers.
- We used social cognitive career theory (SCCT) to understand the effects of three diversity internship programs on minority students' self-efficacy, outcome expectations, and career goals.
Self-Efficacy

Outcome Expectations

Interests, Goals, Actions

Contextual Influences (Barriers and Supports)

Personal Influences
- Age
- Race
- Gender
- Predispositions

(Lent, Brown, and Hackett, 1994)
Research Questions

1. What do interns report as the most important motivating factors for participating in a minority-focused natural resource internship?

2. What impacts do the programs have on:
   - Knowledge
   - Perceptions
   - Interest
   - Self-efficacy
   - Outcome expectations

3. What impacts do the programs have on perceptions of career-related barriers?
Methods

- Survey development
  - SCCT
  - Career Barriers Inventory (McWhirter, 1995)
  - General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995)
  - Pilot tested with CDIP alumni
  - Cronbach’s alpha for reliability within indices and scales

- Preliminary data analysis
  - Paired sample T-tests/Wilcoxon
  - ANOVA
  - Regression
Career Discovery Internship Program
Doris Duke Conservation Scholars Program
Leaders in Environmental Action for the Future
Results
Motivations

- 11 items
- Top 3 Motivations (across all programs)
  - Networking
  - Hands-on experience in conservation field
  - Improving job skills
- ANOVA: differences between programs
  - Counselor recommendation (F=10.26, p<0.01)
  - Friend recommendation (F=10.84, p<0.01)
## Knowledge

<table>
<thead>
<tr>
<th>Topic</th>
<th>Pre</th>
<th>Post</th>
<th>Sig</th>
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<tbody>
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<td>2.58</td>
<td>3.29</td>
<td>.001</td>
<td>.955</td>
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<td>Conservation College Majors</td>
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<td>2.75</td>
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<tr>
<td>Invasive Species</td>
<td>2.96</td>
<td>3.3</td>
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<td>Native Species</td>
<td>2.92</td>
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<td>Pollution</td>
<td>3.29</td>
<td>3.21</td>
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<td>Habitats</td>
<td>3.17</td>
<td>3.29</td>
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<tr>
<td>General Ecology</td>
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<td>3.08</td>
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<tr>
<td>Natural Resource Management</td>
<td>2.57</td>
<td>3.17</td>
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<td>1.033</td>
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## Knowledge

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<td>Conservation College Majors</td>
<td>3.14</td>
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<td>3.14</td>
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<td>Pollution</td>
<td>3.29</td>
<td>3.42</td>
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<tr>
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<td>2.71</td>
<td>3.42</td>
<td></td>
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<tr>
<td>General Ecology</td>
<td>3.29</td>
<td>3.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Resource Management</td>
<td>2.43</td>
<td>3.00</td>
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</table>
Knowledge

- 2 items
- Significant increases in knowledge of
  - Conservation jobs (SD= 1.11, p<.01)
  - Conservation majors (SD=1.22, p<.01)
Perceptions of Nat Res Careers

- Variability of Careers
- Importance
- Pay
- Stability
- Favorability
- Popularity
- Respect

Pre-Internship vs. Post-Internship

n=27
n=12

Career Perceptions

- Stability
- Favorability
- Popularity
- Respect
- Variety of Careers
- Importance
- Pay

Pre-Internship vs. Post-Internship
Perceptions

- Stability
- Favorability
- Popularity
- Respect
- Variety of Careers
- Importance
- Pay

n=56

Pre-Internship
Post-Internship
Interest in careers

- No significant difference for CDIP/DDCSP

<table>
<thead>
<tr>
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<th>SD</th>
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<tr>
<td>CDIP</td>
<td>3.91</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DDCSP</td>
<td>4.5</td>
<td>4.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEAF (Job)</td>
<td>3.29</td>
<td>3.83</td>
<td>.000</td>
<td>.765</td>
</tr>
<tr>
<td>LEAF (Major)</td>
<td>3.19</td>
<td>3.85</td>
<td>.000</td>
<td>.869</td>
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Self-Efficacy

- 16 items (based off general self efficacy scale)
- Mean score increased (3.31 to 3.44)

<table>
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<tr>
<th>Self-Efficacy</th>
<th>Pre</th>
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</tr>
</thead>
<tbody>
<tr>
<td>I have the skills needed to work in a conservation career.</td>
<td>2.82</td>
<td>3.18</td>
<td>0.05</td>
<td>1.215</td>
</tr>
<tr>
<td>If I were to apply for a conservation job/internship now, I would be a</td>
<td>3.06</td>
<td>3.57</td>
<td>0.022</td>
<td>1.000</td>
</tr>
<tr>
<td>competitive candidate.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If I invest the necessary effort, I can solve the types of issues cons</td>
<td>3.18</td>
<td>3.64</td>
<td>0.022</td>
<td>1.254</td>
</tr>
<tr>
<td>ervations professionals deal with.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can always manage to solve difficult problems if I try hard enough.</td>
<td>3.50</td>
<td>3.43</td>
<td>0.03</td>
<td>.378</td>
</tr>
<tr>
<td>If I am in trouble, I can usually think of a solution.</td>
<td>3.36</td>
<td>3.18</td>
<td>0.043</td>
<td>.756</td>
</tr>
</tbody>
</table>

(Schwarzer & Jerusalem, 1995)
## Self-Efficacy

- **16 items**
  - Mean score increased significantly (2.90 to 3.54)

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</tr>
</thead>
<tbody>
<tr>
<td>I have the skills needed to work in a conservation career.</td>
<td>2.58</td>
<td>3.08</td>
<td>0.047</td>
<td>1.215</td>
</tr>
<tr>
<td>If I were to apply for a conservation job/internship now, I would be a competitive candidate.</td>
<td>2.42</td>
<td>3.77</td>
<td>0.002</td>
<td>1.000</td>
</tr>
<tr>
<td>I can handle whatever comes my way in a conservation job.</td>
<td>2.58</td>
<td>3.08</td>
<td>0.035</td>
<td>1.254</td>
</tr>
<tr>
<td>I can always manage to solve difficult problems if I try hard enough.</td>
<td>3.08</td>
<td>3.23</td>
<td>0.00</td>
<td>.378</td>
</tr>
<tr>
<td>Thanks to my resourcefulness, I know how to handle unforeseen situations.</td>
<td>2.67</td>
<td>3.77</td>
<td>0.008</td>
<td>.756</td>
</tr>
<tr>
<td>I can remain calm when facing difficulties because I can rely on my coping abilities.</td>
<td>2.92</td>
<td>3.38</td>
<td>0.047</td>
<td>.787</td>
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<tr>
<td>If I am in trouble, I can usually think of a solution.</td>
<td>2.73</td>
<td>3.62</td>
<td>0.004</td>
<td>.756</td>
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Self-Efficacy

- 17 items (TNC generated)
  - Mean score increased (3.64 to 4.03)
  - Individual items significant (p<0.05)

(Fraser, Gupta, & Rank, 2013)
Outcome Expectations

- 6 Items
- Mean score increased (4.13, 4.22)

<table>
<thead>
<tr>
<th>Outcome Expectations</th>
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<th>Post</th>
<th>Sig</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>If I know my interests and abilities, then I will be able to choose a good career.</td>
<td>4.45</td>
<td>3.64</td>
<td>0.002</td>
<td>1.103</td>
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<tr>
<td>I see other students like me successfully getting jobs in the conservation field</td>
<td>3.67</td>
<td>4.50</td>
<td>0.000</td>
<td>0.999</td>
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</table>
Outcome Expectations

- 6 Items
- Mean score decreased (4.39, 4.21)

<table>
<thead>
<tr>
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<th>Post</th>
<th>Sig</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>If I know my interests and abilities, then I will be able to choose a good career.</td>
<td>4.83</td>
<td>3.54</td>
<td>0.000</td>
<td>.488</td>
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<tr>
<td>I see other students like me successfully getting jobs in the conservation field</td>
<td>3.75</td>
<td>4.46</td>
<td>0.022</td>
<td>1.113</td>
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Outcome Expectations

- 2 items
  - significant increase ($p<0.01$)

<table>
<thead>
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<th>Post</th>
<th>Sig</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td>Hands– on experience in programs like LEAF have prepared me for a possible career in conservation</td>
<td>3.96</td>
<td>4.80</td>
<td>.000</td>
<td>.746</td>
</tr>
<tr>
<td>I can be successful in a conservation career</td>
<td>3.59</td>
<td>4.52</td>
<td>.000</td>
<td>.773</td>
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</table>
Barriers - Advantages

- 8 Items
  - No significant changes for CDIP or DDCSP
  - Average ~3.4
<table>
<thead>
<tr>
<th>Barriers- Advantages</th>
<th>Pre</th>
<th>Post</th>
<th>Sig</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>My friends' opinions about my career are _____ to my career choice.</td>
<td>3.15</td>
<td>3.28</td>
<td></td>
<td></td>
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<tr>
<td>My family's opinions about my career are _____ to my career choice.</td>
<td>3.20</td>
<td>3.52</td>
<td>0.007</td>
<td>.820</td>
</tr>
<tr>
<td>My gender is _____ to my career choice.</td>
<td>3.00</td>
<td>3.28</td>
<td>0.05</td>
<td>1.017</td>
</tr>
<tr>
<td>My age is _____ to my career choice.</td>
<td>3.07</td>
<td>3.43</td>
<td>0.005</td>
<td>.872</td>
</tr>
<tr>
<td>My race/ethnicity is _____ to my career choice.</td>
<td>3.06</td>
<td>3.43</td>
<td>0.001</td>
<td>.808</td>
</tr>
<tr>
<td>My finances are _____ to my career choice.</td>
<td>2.94</td>
<td>3.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My personal experiences _____ to my career choice.</td>
<td>3.61</td>
<td>4.39</td>
<td>0.00</td>
<td>1.058</td>
</tr>
<tr>
<td>My level of experience with the outdoors or nature _____ to my career choice.</td>
<td>3.56</td>
<td>4.24</td>
<td>0.00</td>
<td>1.179</td>
</tr>
<tr>
<td>M</td>
<td>3.20</td>
<td>3.58</td>
<td></td>
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</tr>
</tbody>
</table>
Predictors of Career Interest

Personal Influences
- Age
- Race
- Gender
- Predispositions

Self-Efficacy

Outcome Expectations

Interests, Goals, Actions

Contextual Influences (Barriers and Supports)

R² = 23.4
Self Efficacy: beta = 0.429, p < 0.001
Outcome Expectation: beta = 0.193, p < 0.05
Discussion

- Exposure to career
  - Change perceptions of field
    - Insufficient knowledge
    - Stereotypes
  - Contributes to understanding of the organizations
  - Enhance career self-efficacy, positive outcome expectations
  - Develop career self-identity and set career goals

(Ko & Sidhu, 2012; Callanan and Benzing, 2004)
Discussion

- Positive outcome expectations and self-efficacy predict career interest
- Limitations of study
  - Self-selection for program
  - Small sample size (DDCSP)
    - Lack of post-internship survey response

(Lent, Brown, and Hackett, 1994; McWhirter, 1997)
Preliminary Recommendations

- Provide broad exposure to natural resource and conservation careers
  - Hands-on and meaningful
- Promote
  - Self-efficacy
  - Positive outcome expectations
- Career interest
  - Need for interventions at younger ages
    - By HS, most students have chosen an area of interest

(Berryman, 1983; Starzomski et al., 2004)
Next Steps

- Mixed methods study
- Qualitative analysis
  - Interviews with program staff and mentors
  - Focus groups with interns
- Final recommendations
Project Funding

- National Science Foundation DDIG
- US Fish and Wildlife Service
- US Geological Survey
Questions?

Nia Haynes
PhD Candidate
University of Florida
Wildlife Ecology and Conservation Dept.
n.haynes@ufl.edu