Thesis Prospectus

S&T Students’ acquisition of Social Capital and Networks: Traditional Education vs. IUCRC, Domestic vs. International and Gender Differences

IUCRC Evaluator’s Meeting
June 7, 2012

Olena Leonchuk
North Carolina State University
Bowling Alone

• “Social networks have value. Just as a screwdriver (physical capital) or a university education (human capital) can increase productivity (both individual and collective), so do social contacts affect the productivity of individuals and groups“

Putnam, Robert. (2000), Bowling Alone: The Collapse and Revival of American Community or America’s Declining Social Capital
Purpose

• Social Capital and Networks of professionals facilitate knowledge creation and knowledge transfer.

• Study investigates if Social Capital and Networks are more likely to be acquired by young scientists in Triple Helix research centers vs. traditional university settings (focus on STEM scientists whose knowledge is more specific and less concentrated on ‘soft’ skills).

• International students’ experiences, social adaptation and decision to stay in the US (50% of graduate students in research centers & STEM degrees are international).

• Gender differences in acquired social capital and networks in the predominately male-dominated STEM disciplines.
Theory

1. Human Capital and Social Networks
     “S&T human capital further includes the social capital that scientists continually draw upon in creating knowledge – for knowledge creation is neither a solitary nor singular event. In sum, it is this expanded notion of human capital when paired with a productive social capital network that enables researchers to create and transform knowledge and ideas in ways that would not be possible without these resources.”

2. International Students Adaptation
   - Social and professional experiences in the US universities
   - Language barrier
   - Cultural Shock

3. Gender and professional Networking
   - Feminist perspective on exclusion of women from professional networks in the male-dominated disciplines
# Literature

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<th>Author/Date</th>
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<th>DV Students Outcomes</th>
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<td>Schneid 2007</td>
<td>IUCRC Graduate Students</td>
<td>N=190 (37%) 2005-2006</td>
<td>Demographic, Student &amp; Center Characteristics; Center Experiences &amp; Interactions</td>
<td>Satisfaction, Perceived Skills, Scholarly Achievement, Career goals</td>
<td>Cross-sectional study</td>
<td>Exploratory Factor Analysis, Multiple Regression and Logistic Regression.</td>
<td>Experiential and multidisciplinary centers, interactions and technical involvement are strongest predictors of students’ satisfaction.</td>
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<td>Scott, Schaad &amp; Brock 1993</td>
<td>IUCRC Graduates &amp; Traditional Alumni</td>
<td>C = 138 E = 112</td>
<td>Graduate experiences</td>
<td>Perception of Training Experiences</td>
<td>Random Sample. Mail Survey and Telephone Interview</td>
<td>Comparison of means between the groups</td>
<td>IUCRC were more satisfied about their training experiences.</td>
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<td>Behrens &amp; Gray 2001</td>
<td>IUCRC Grad Students</td>
<td>Engineering Departments at 6 Universities N=482</td>
<td>Source and form of Industry Funding</td>
<td>Academic Freedom</td>
<td>Purposive Sample. Mail Survey Follow-up by phone call, and Follow-up postcard within 3 weeks</td>
<td>Factor Analysis, Descriptive, Correlation, Regression etc.</td>
<td>Industry support does not negatively influence outcomes for students</td>
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<td>Astin, Keup &amp; Lindholm 2002</td>
<td>US Undergraduate Students</td>
<td>117 institutions. 1985-1989 (N)= 14,021, 1994-1998 (N)=9,281</td>
<td>System Transformation of Higher Education</td>
<td>Involvement, student-faculty interaction &amp; service participation</td>
<td>Longitudinal student database at UCLA. Two groups: 1985 (Fr.) – 1989 (follow-up); 1994 (Fr.) – 1998 (follow-up)</td>
<td>Regression (second time period ‘expected’ while first is a standard)</td>
<td>Increase in student-faculty interaction in liberal arts colleges, and lower than average increase in public and private universities.</td>
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Hypothesis

• Graduate students in IUCRCs gain more social capital, professional networking and receive more job offers than graduate students in the traditional university settings.

• International students in IUCRCs have a higher level of social adaptation to a new culture and express more interest to stay in the US after completion of their studies.

• There is gender differences in professional networks and social capital students acquire in both settings.
Terms

• Definitions
  o Networks and Social Capital
  o IUCRC and ‘traditional’ university settings

• Measures and Instrumentation
  o Social Networks Analysis (density, centrality, cohesion)
  o International Students’ adaptation
Method

• Population and Sample
  o Total N 200
  o IUCRC (N=100) and traditional (N=100) graduate students in the same departments and universities
  o Equal sample N for US and international students in both groups
  o International students and defense research

• Procedure
  o Identification: contact IUCRCs’ directors and evaluators and S&T departments
  o Data Collection:
    1. electronic questionnaire
    2. one-week and two-week electronic follow-ups
    3. three-week phone call
  o Motivation:
    a. authority
    b. reward (gift card)

• Analysis: multiple regression and/or path analysis
Design

IV (Schneider)
• Training Process
• Organizational Structure
• Demographics

Mediators
• Teams vs. Individuals
• Exposure to and Networking with people from different disciplines

DV
• US and International:
  o Perceived Acquisition of Social Capital and professional Networks
  o Number of Internships/Job offers
• International:
  o Decision to stay in the US
  o Level of social adaptation