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Thesis

Social capital and graduate training of
Science & Technology students
at the U.S. universities.

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Study Summary

- Scientific & Technical Human Capital as a new form of evaluation of S&T policies (Bozeman, Dietz & Gaughan, 2001).
- Importance: Lack of literature on relationship of training of the young scientists and their STHC.

Assumptions:

- Training at I/UCRCs has an impact on students' STHC.
- Training at I/UCRCs influences intention of international students to stay in the U.S.

Goal: Assess whether IUCRC training impacts social capital.

IV: graduate training (I/UCRC vs. non-I/UCRC)

DV: professional Social Capital (STHC)

Population: PhD students at the research-intensive universities.

Sample: 100 from I/UCRCs and 100 from corresponding Engineering & Science departments.

- Targeting universities with multiple IUCRCs to minimize IRB transactions.

Hypothesis 1: Students trained at I/UCRC acquire more professional social capital.

IV - Graduate Training

- I/UCRCs tend to follow a more collaborative model of science than traditional departmental student training.
 - Their type of collaboration involves cross sector interactions
- “Significant involvement” with I/UCRC – at least one year.
- Controlling for involvement with other CRCs.
- Control condition: Students enrolled in the same department at the same university

DV - Social Capital

Summary of Literature



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Theory

Numerous attempts to explain the complex concept of social capital, its outcomes and measures. The main focus on its types and multiple methods of measuring it.

- Main types
 - Bonding (trust, norms & values)
 - Bridging (networks of connections)
- Dimensions:
 - Structural (network ties & configuration)
 - Cognitive (shared vision & language)
 - Relational (trust, norms, obligations & identification)

Empirical Literature

Few are based on theory:

- Cite one or two scholars
- Provide one paragraph on social capital theory
- No comprehensive measures of social capital with an exception of the World Bank measure of countries' SC which is not commonly accepted to be reliable.

- Depends on type of social capital (general or context-specific such as entrepreneurial activities).
- Common issues:
 - Define and measure social capital in terms of its outcomes and things that influence it.
 - Implement either bridging or bonding type of social capital. Both types are interrelated.

Scientific & Technical Human Capital (STHC)

- Need for evaluating S&T not just through classic forms of capital (economic and human), but also via social capital since “science does not happen in vacuum.”
- No measure of social capital of scientist other than crude measure based on publications and patents with others.
- Specific focus on connections with Industry as a characteristic of an important cross-sector connection which is potentially beneficial for students' professional growth.

Steps

- Universities: North Carolina State University (6), Ohio State (7), Arizona State (5), Univ. of Arizona (4), Virginia Tech (7), Univ. of Florida (5), Texas A&M (4)
 - As a result, particular sites, not whole centers participate in this research.
 - Average of total PhD at centers is 20. N of students per site is smaller depending on center's size.
1. Acquire students' contact information. More challenging for control group:
 - a. Ask center director/department head for students' contacts
 - b. Research university/center web site
 2. Ask NSF to send an official email to students.
 3. Email students survey invitation and the link with a chance to win one of three 100 dollars Amazon gift cards.
 4. Follow-up by email & phone.

Timeline

- January - Finalize measure of STHC
- Early February - Complete and defend proposal
- Early February - Obtain IRB approval
- Middle February – obtain students’ contacts & distribute questionnaire
- Late February - Collect data
- March & April - Analyze data
- May - Defend thesis



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Your feedback is greatly appreciated!

Thank you.