Enhancing Scholarly Productivity Among Physical Therapy Faculty through Professional Networks

Betsy J. Becker
Gilbert Willett
Victoria Kennel

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Betsy J. Becker, PT, DPT, PhD
Victoria Kennel, PhD
Gilbert Willett, PT, PhD

Education Leadership Conference
American Physical Therapy Association

Acknowledgements of funding

Academy of Physical Therapy Education of the American Physical Therapy Association
College of Allied Health Professions
University of Nebraska Medical Center
Division of Physical Therapy Education
University of Nebraska Medical Center

OBJECTIVES

1. Describe an effective professional network for physical therapy faculty.
2. Identify strategies for modifying a professional network to maximize effectiveness

MANUSCRIPT
An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. J of PT Education. June 2019
https://tinyurl.com/ProjectLINK2019paper

DISSertation
Early Career Physical Therapy Faculty Networking and Scholarly Productivity: A Mixed-Methods Study
Digital Commons
University of Nebraska Medical Center
https://tinyurl.com/BJBeckerDissertation

BOOK CHAPTER

BACKGROUND

2733
full time PT faculty

250
PT Programs

Accreditation: All faculty must be active in scholarly activity

45%
academic doctoral degrees

21%
active in research

173 + 116 = 289
Current + Projected Vacancies

Network connections & scholarly activity

- Publishing
- Retention and Advancement
- Improved performance
- Innovation
- Increased awareness about power
- Catalyze relationships & connections
- Career Satisfaction
- Collaborations
- Strength of network

Improved performance, Innovation, Collaborations

Increased awareness about power, Catalyze relationships & connections


Social Capital Theory

1. Brokering
2. Social Cohesion
3. Access to Resources

- Brokering: Facilitating flow of resources & information
- Social Cohesion: Strong support and aid in social integration
- Access to Resources: Direct & indirect flow


Definition: Social Network Analysis

How individual connections form into social structures that influence outcomes of the group

Krebs 2008, Borgatti 2014

Purpose

The purpose of this mixed methods study was to explore agency and the professional network structure and composition of early career Physical Therapy faculty as they relate to scholarly activity.

The study used an explanatory sequential mixed methods design in which qualitative and quantitative data were collected in series, analyzed separately, and merged.


Mixed Methods Study

Survey 1 (QUAN) - July-Sept 2016
Survey 2 (QUAN) - July-Sept 2017
Interviews (QUAL) - Oct - Dec 2017
Integration (Mixing) - Jan - Aug 2018

Research Question:
Does the network structure and composition at baseline predict scholarly activity one year later?

Methods
Study Participants

INCLUSION
✓ Working full time
✓ Accredited physical therapy program
✓ Within their first five years
✓ Workload of primary teaching and service

EXCLUSION
✓ Changed jobs during the study

Recruitment goal: 42

Participant Activity
Consented to participate
Completed questionnaire - agency, scholarly activity, professional network, submitted CV
Received mid-year individualized report
Completed questionnaire - agency, scholarly activity, professional network, submitted CV (1 yr later)

Methods: data collection

Independent Variables
Network measures

Outcome Variable
Scholar Score

Statistical Analysis
Descriptive analysis
Single independent variable ordinary least squares regression and Multivariable ordinary least squares regression models

Reporting Scholarly Activity
0 → no scholarly involvement
1 → active, but no products yet
2 → less than 5 disseminated products
3 → 5 to 10 disseminated products
4 → more than 10 disseminated products
Program Directors from the early career PT study participants’ institutions

PT faculty with experience on Promotion and Tenure Committees


Scholar Score Study Participants

Publication | Grant | Presentation


Are you interested in trying out the web application?

Contact Betsy for more information

BetsyJ.Becker@unmc.edu
Network

Name GENERATOR Questions
Who is an important source of work-related information such as teaching, scholarly activity, and service and administration?

- Ronda Johnson
- Brad O’Dell
- Karen Newberg
- Quin Do
- Mieo Wo
- Jacyee Walker
- DJ Roberts
- Brit VonSteven
- Matt Deigo
- Joe Smith

Name INTERRELATOR Questions
Who does Joe Smith know and could share information or ask a question?

- Ronda Johnson
- Brad O’Dell
- Karen Newberg
- Quin Do
- Mieo Wo
- Jacyee Walker
- DJ Roberts
- Brit VonSteven
- Matt Deigo

Your Professional Network
Complete Part 1 & 2 on the worksheet

INFORMATION about each Contact

- Closeness
- mentor
- expertise in scholarly activity
- primary work responsibilities (PT non-PT)
- age
- gender
- race/ethnicity
- academic rank
- tenure status
- highest academic degree
- experience with presentations
- publishing and grants

Methods: Social Network Analysis

- STRUCTURE
  - Shape
  - Size
  - Density
- COMPOSITION
  - Homophily
  - Heterophily

Krohne 2008, Borgatti 2014
Results

Response rate

Time 1 | Time 2 (one year later)
66 | 50

76%

Participant Characteristics

Participant’s Institution

Carnegie Classification

N (%)  
Special Focus 6 (15%)  
Doctoral 13 (33%)  
Masters 17 (44%)  
Baccalaureate 3 (8%)
Mean Scholar Score

Baseline: 32.7 (SD 46.5)
One Year Later: 66.6 (SD 77.6)

Mean Size
25.4 contacts
(SD=13.4, range 4-62)

Mean Density
40.2%
(SD=16.6, range 18.6-100%)

Your Professional Network
Complete Part 3 Density on the worksheet

Network Structure
n=50

Shape

Composition
Diversity among the network people

Interconnectedness
Less interconnected

Heterogeneity
Diversity among the network people

Knoke 2008, Borgati 2014

Becker 2019
Heterogeneity
Diversity among the network people

0
No Diversity
Only connect with people in the same relational group

1
Diversity
Same number of connections to those in each relational group

Homophily
Similarity between network contact & early career faculty

Internal Tie
- 16 PT faculty at institution X
- 6 PT at different institutions

External Tie
- 2 non-PT at the institution X
- 3 non-PT at different institutions

Homophily
Similarity between network contact & early career faculty

El Index = \[
\frac{\text{External Ties} - \text{Internal Ties}}{\text{External Ties} + \text{Internal Ties}} = \frac{(6 + 2 + 3) - 16}{(6 + 2 + 3) + 16} = -0.2
\]

Heterogeneity
0 = no diversity

Homophily
A measure of similarity between characteristics of members in a network compared to you.

Perfect Homophily
Only connects with people with the same characteristic

Perfect Heterophily
Only connects with people with different characteristic

Your Professional Network
Complete Part 4 Homophily (in-group & out-group) on the worksheet
Homophily

\[ -1.0 \leq EI \leq +1.0 \]

**Description**

- **Academic Rank**: +0.94 (0.11, +0.57 - +1.00)
- **Work location & PT or non-PT**: +0.32 (0.26, -0.43 - +0.73)
- **Academic Degree**: +0.32 (0.33, -0.43 - +1.00)
- **Age**: +0.32 (0.54, -1.00 - +0.96)
- **Clinical Specialty**: -0.22 (0.54, -1.00 - +0.96)
- **Gender (male, female)**: -0.30 (0.34, -0.83 - +0.69)

Multivariate Analysis

**Final Model**

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(constant)</td>
<td>52.864</td>
<td>0.062</td>
</tr>
<tr>
<td>Duration as a faculty member</td>
<td>26.962</td>
<td>0.002</td>
</tr>
<tr>
<td>Academic Doctoral Degree</td>
<td>92.527</td>
<td>0.000</td>
</tr>
<tr>
<td>Network Structure: Density</td>
<td>-1.099</td>
<td>0.048</td>
</tr>
</tbody>
</table>

\( n=50 \)

\( \leq .05 \) for significance

**Discussion**

Research Question:

Does the network structure and composition at baseline predict scholarly activity one year later?

Density (less interconnected)

**Study Limitations**

a) Individual professional networks only – other factors impact productivity
b) Short duration to study scholarly activity productivity
c) Errors of omission and commission for network contacts
d) Bias – Betsy named in some networks
e) Recruitment limited

**Future Study**

- Scholar Score
- Subsets of Professional Networks
Key Implications

a) Scholar Score was a good measure for capturing a variety of scholarly activities
b) Faculty can be productive in their first five years regardless of “days on the job”
c) Those without an academic doctoral degree can be successful with scholarly activity
d) High agency perspective and agency behavior scores indicate high interest in career advancement
e) Practical strategies can make networks more effective (i.e. less interconnected and open).

References


See last page of this handout for references in larger print.

The worksheet is on the next page
Enhancing Scholarly Productivity Among Physical Therapy Faculty through Professional Networks

Worksheet | APTA Educational Leadership Conference | 10/20/19 | Bellevue, WA
Betsy J. Becker, PT, DPT, PhD | Victoria Kennel, PhD | Gilbert Willett, PT, PhD
Betsyj.becker@unmc.edu | @bjbecko

Part 1: Who is an important source of work-related information to support your efforts in teaching, scholarly activity, and service and administration? List six people by putting one name in each circle, and ensure at least 1 of these people is a person outside the PT profession.

Part 2: Draw a line between the circles where the individuals know each other and could share information or ask a question.

Part 3: Calculate network measures – instructions given during the presentation

<table>
<thead>
<tr>
<th>Network Measure</th>
<th>Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size</strong> (excluding “owner” of the network)</td>
<td>6</td>
</tr>
<tr>
<td><strong>Density</strong> – A measure of interconnectedness between individuals in the network. A proportion of people who are also connected with each other.</td>
<td>Total number of lines (ties) between people: ____ divided by Total number of possible connections: 42</td>
</tr>
<tr>
<td>Calculate Density: My total ties / 42 = ____ x100</td>
<td></td>
</tr>
<tr>
<td><strong>Homophily</strong> - Similarity between individuals in the network and me for a given characteristic (e.g. PT profession). Measured by the External – Internal Index (EI Index).</td>
<td>Internal ties (I): total people in PT profession ____ External ties (E): total people not in PT profession ____</td>
</tr>
<tr>
<td>Calculate the EI Index: I – E / I + E = ____</td>
<td></td>
</tr>
</tbody>
</table>
References


