10-20-2019

Enhancing Scholarly Productivity Among Physical Therapy Faculty through Professional Networks

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Slide 1

Enhancing Scholarly Productivity Among Physical Therapy Faculty through Professional Networks

Betsy J. Becker, PT, DPT, PhD
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Education Leadership Conference
American Physical Therapy Association

October 20, 2019

University of Nebraska Medical Center

Slide 2

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

Slide 3

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/BJBBeckerDissertation

BOOK CHAPTER
Early Career Faculty Development: Maximizing Social Capital for Meaningful Clinical Reasoning In Musolino GM, Jensen GM, *Clinical Reasoning and Decision-Making in Physical Therapy: Facilitation, Assessment and Implementation.* Slack Publishing. In press.

Slide 4

Objectives

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

Slide 5

Background

Slide 6

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

full time PT faculty
173 + 116 = **289**
Current + Projected Vacancies

CAPTE Standards 2015, CAPTE Fact Sheet 2018-2019, Snyder-Mackler 2015, Hinman 2017

Background

Network connections & scholarly activity

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

Stupnisky 2015, Thomas 2008, Warner 2016, Rodan 2004, Law 2016, Niehaus 2015, Anderson 2008, Steffen-Fluhr 2011, Katerndahl 2012, Becker 2019, Hoppe 2010.

7

Background

Social Capital Theory

1
Brokering

Facilitating flow of resources & information

2
Social Cohesion

Strong support and aid in social integration

3
Access to Resources

Direct & indirect flow

Crossley 2015, Rodan 2004, Ryan 2016, Warner 2016

8

Definition: Social Network Analysis

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

STRUCTURE   **COMPOSITION**

Knoke 2008, Borgatti 2014

9

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.
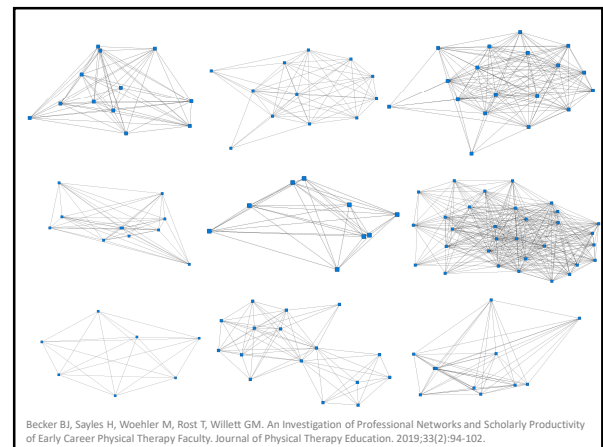
10

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.

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

11

Mixed Methods Study

Survey 1 (QUAN) — July-Sept 2016

Scholarly Activity Score Developed

Survey 2 (QUAN) — July-Sept 2017

Interviews (QUAL) — Oct - Dec 2017

Integration (Mixing) — Jan - Aug 2018

QUAN → QUAL → Mixing

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

12

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

QUAN → QUAL → Mixing

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

13

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

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14

Participant Activity

Consented to participate ①

Completed questionnaire - agency, scholarly activity, professional network, submitted CV ②

Received mid-year individualized report ③

Completed questionnaire - agency, scholarly activity, professional network, submitted CV (1 yr later) ④

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15

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

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16

Methods

Outcome Variable:
Scholarly Activity

17

CAPTE
COMMISSION ON ACCREDITATION IN PHYSICAL THERAPY EDUCATION

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

CAPTE Position Paper

18

Scholar Score

Scholar Score Study Participants

✓ Program Directors from the early career PT study participants' institutions

✓ PT faculty with experience on Promotion and Tenure Committees

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19

Scholar Score

Publication	Grant	Presentation

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

20

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

21

Scholar Score

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

22

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

23

Scholar Score

Are you interested in trying out the web application?

Contact Betsy for more information
BetsyJ.Becker@unmc.edu

24

Network

25

Name GENERATOR Questions

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

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

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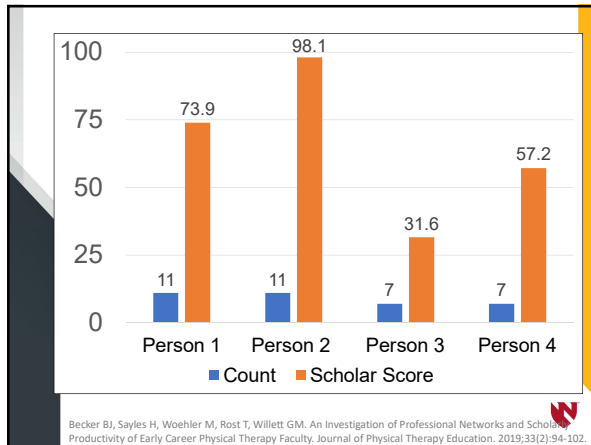
26

Name INTERRELATOR Questions

Who does **Joe Smith** know and could share information or ask a question?

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

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

27

Your Professional Network
Complete Part 1 & 2 on the worksheet

28

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

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.
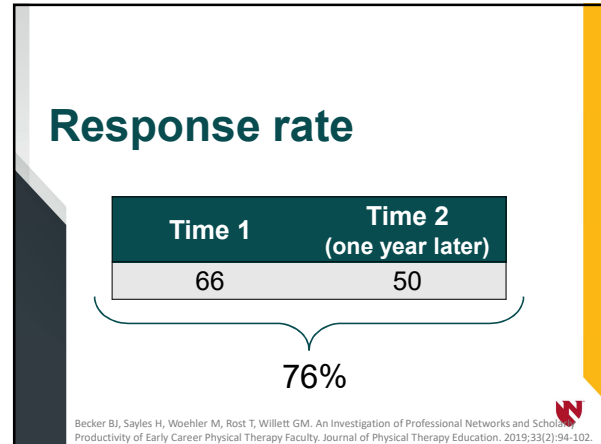
29

Methods:
Social Network Analysis

STRUCTURE	COMPOSITION
Shape	Homophily
Size	Heterophily
Density	

Knoke 2008, Borgatti 2014

30

Results

31

Response rate

Time 1	Time 2 (one year later)
66	50

76%

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

32

Participant Characteristics n=50

20% Male
80% Female

10% 22% 25-34 years
28% 34-44 years
40% 45-54 years
55-64 years

2% 2% White Caucasian
96% Asian

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

33

Participant Characteristics

n=50

	N (%)
Director of Clinical Education	12 (24%)
With an Academic Doctoral Degree	9 (16%)
Academic Rank	
Assistant Prof	45 (90%)
Instructor	5 (10%)

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34

Participant's Institution

39 institutions | 24 states

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35

Participant's Institution
Carnegie Classification

39 institutions | 24 states

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

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

36

Mean Scholar Score

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

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

37

NETWORK STRUCTURE

Mean Size

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

Mean Density

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

n=50

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38

Your Professional Network
Complete Part 3 Density on the worksheet

me

39

STRUCTURE

density

interconnectedness

LESS interconnected

MORE interconnected

OPEN

CLOSED

Knoke 2008, Borgatti 2014

40

NETWORK STRUCTURE

Shape

Image shown at conference

QUAN

Becker 2019

41

COMPOSITION

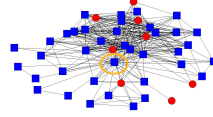**heterogeneity**

Diversity among the network people

Crossley 2015

42

Slide 43

COMPOSITION

<u>Heterogeneity</u>
<u>Diversity</u> among the network people

0

No Diversity
Only connect with people in same relational group

1

Diversity
Same number of connections to those in each relational group

Crossley 2015

43

Slide 44

COMPOSITION
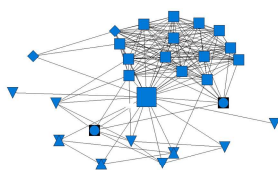
Heterogeneity
0 = no diversity

Work location & PT (not PT)	Expertise in grants, presentations, or publishing
Job Role-Teaching	Clinical specialty + Work location + Grants + Presenting + Publishing + Job Role-Teaching + Scholarly Activity + Administration and Services
Job Role-Scholarly Activity	
Job Role-Clinical Practice	
Academic Degree	
Academic Rank	Academic Rank + Tenure + Academic Degree + Race + Age + Gender
Clinical Specialty	
Age	Academic Rank + Tenure + Academic Degree
Tenure	
Race	Race + Age + Gender
Gender	
Range: 0.15-0.78	**Range: 0.56 – 0.76**

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

44

Slide 45

COMPOSITION

<u>Homophily</u>
<u>Similarity</u> between network contact & early career faculty
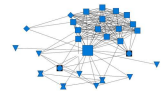
Internal Tie ⬛ *16 PT faculty at institution X*

External Tie
🔺 *6 PT at different institutions*
🔵 *2 non-PT at the institution X*
⬛ *3 non-PT at different institutions*

Crossley 2015

45

Slide 46

COMPOSITION

<u>Homophily</u>
<u>Similarity</u> between network contact & early career faculty
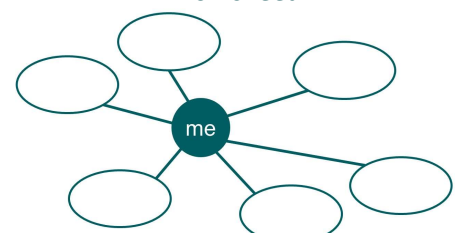
$$EI\ Index = \frac{External\ Ties - Internal\ Ties}{External\ Ties + Internal\ Ties}$$

$$\frac{(🔺 + 🔵 + ⬛) - ⬛}{(🔺 + 🔵 + ⬛) + ⬛} = \frac{(6 + 2 + 3) - 16}{(6 + 2 + 3) + 16} =$$

- .2

Crossley 2015

46

Slide 47

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

me

47

Slide 48

Crossley 2015

- .2

-1

1

Perfect Homophily
Only connects with people with the same characteristic

Perfect Heterophily
Only connects with people with different characteristic

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

Crossley 2015

48

Slide 49

NETWORK COMPOSITION

n=50

Homophily

(EI Index)

-1.0 ← → +1.0

perfect homophily   perfect heterophily

Description	Mean (SD, range)
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 (0.19, +0.00 - +1.00)
Clinical Specialty	-0.22 (0.54, -1.00 - +0.96)
Gender (male, female)	-0.30 (0.34, -0.83 - +0.69)

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49

Slide 50

n=50

Multivariate Analysis

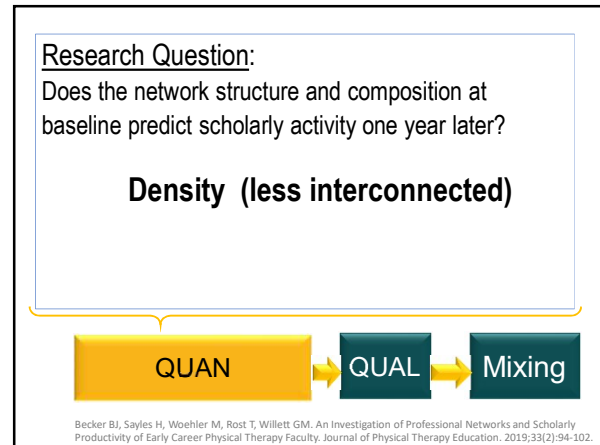|	Final Model Adjusted R^2 = .313	
	B	Sig.
(constant)	52.864	0.062
Duration as a faculty member	26.962	0.002
Academic Doctoral Degree	92.527	0.000
Network Structure: Density	-1.099	0.048

$\leq$.05 for significance

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50

Slide 51

Discussion

51

Slide 52

Research Question:

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

Density (less interconnected)

QUAN → QUAL → Mixing

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52

Slide 53

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

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53

Slide 54

Future Study

Scholar Score
Subsets of Professional Networks

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54

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).

Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

55

What does this mean for YOU moving forward?

| Early Career Faculty | Mentor | Administrator |

56

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6. Commission on Accreditation for Physical Therapy Education (CAPTE) standards and required elements for accreditation of physical therapist education programs. http://www.capteonline.org/uploadedFiles/CAPTEorg/About_CAPTE/Resources/Accreditation_Handbook/CAPTE_PTStandardsEvidence.pdf. Accessed December 7, 2017.
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8. Hinman MR, Brown T. Changing profile of the physical therapy professoriate—Are we meeting CAPTE's expectations? *Journal of Physical Therapy Education.* 2017;31(4):95-104.
9. Hoppe, Bruce, and Claire Reinelt. Social network analysis and the evaluation of leadership networks. *The Leadership Quarterly.* 2010;21(4): 600-619.
10. Kalsrndahl D. Co-evolution of departmental research collaboration and scholarly outcomes. *Journal of Evaluation in Clinical Practice.* 2012;18(6):1241-1247.
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12. Law M, Wright S, Mylopoulos M. Exploring community faculty members' engagement in educational scholarship. *Canadian Family Physician.* 2016;62(9):e524-530.
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14. Ryan L. Looking for weak ties: using a mixed methods approach to capture elusive connections. *Sociological Review.* 2016;64(4):951-969.
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57 *See last page of this handout for references in larger print.*

Question & Answer Session

Enhancing Scholarly Productivity Among
Physical Therapy Faculty through
Professional Networks

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

Education Leadership Conference
American Physical Therapy Association

October 20, 2019   University of Nebraska Medical Center

58

59

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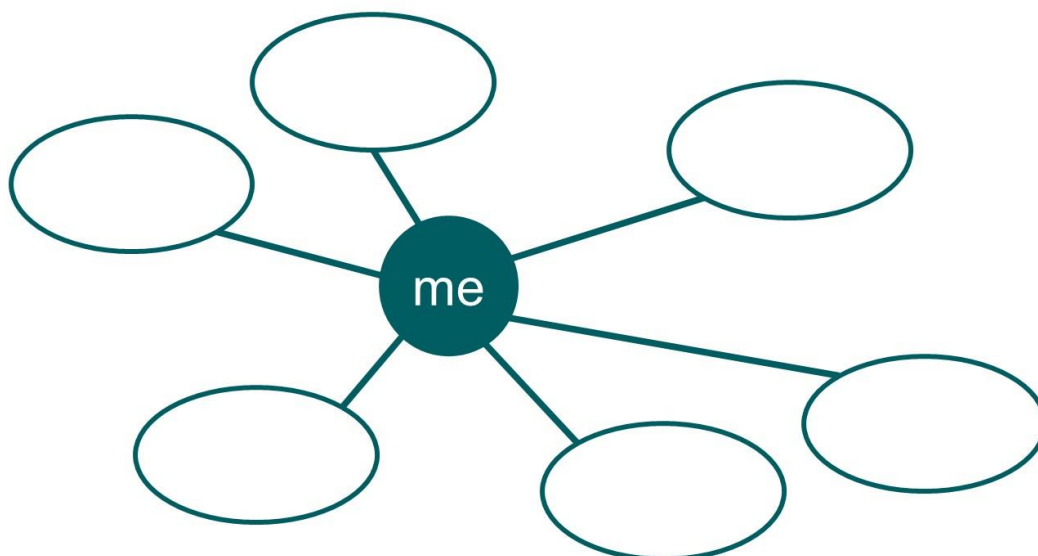
Part 3: Calculate network measures – instructions given during the presentation

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

References

1. Anderson MH. Social networks and the cognitive motivation to realize network opportunities: a study of managers' information gathering behaviors. *Journal of Organizational Behavior.* 2008;29(1):51-78.

2. Becker BJ, Sayles H, Woehler M, Rost T, Willett GM. An Investigation of Professional Networks and Scholarly Productivity of Early Career Physical Therapy Faculty. Journal of Physical Therapy Education. 2019;33(2):94-102.

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5. Commission on Accreditation for Physical Therapy Education (CAPTE) aggregate program data: Physical therapist education fact sheets 2018-19. http://www.capteonline.org/uploadedFiles/CAPTEorg/About_CAPTE/Resources/Aggregate_Program_Data/AggregateProgramData_PTPrograms.pdf. Accessed 9/30/19

6. Commission on Accreditation for Physical Therapy Education (CAPTE) standards and required elements for accreditation of physical therapist education programs. http://www.capteonline.org/uploadedFiles/CAPTEorg/About_CAPTE/Resources/Accreditation_Handbook/CAPTE_PTStandardsEvidence.pdf. Accessed December 7, 2017.

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