

## "Only Connect":

A Mixed Methods Study of How First-Year Students Create Residential Academic and Social Networks

Rachel A. Smith  
Baruch College, CUNY  
rachel.smith@baruch.cuny.edu

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## Acknowledgements

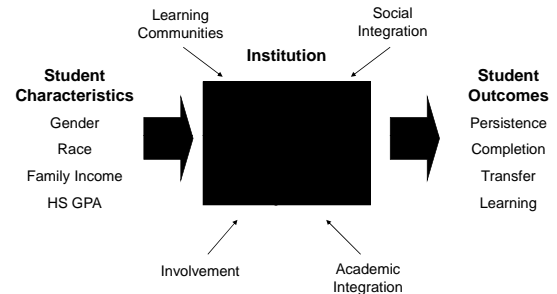
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- Thank you to my participants and staff in residence life and the learning communities office

## Introduction

- First-year college students: new environment, need to create academic/social relationships
- College administrators structure environments where students are more likely to create certain relationships (e.g. learning communities)
- Little is known about how these specific "networks" of relationships facilitate educational outcomes



## Inside the Box



## Theoretical Framework

- Academic and/or Social Integration (Tinto, 1993)
  - If students are connected to the institution academically and/or socially, they will be less likely to leave it
- "Involvement" & "Engagement" as a proxy for learning & a measure of student success (Kuh, Astin, etc.)

## Theoretical Framework

- Learning Community definitions & research
  - Participation in LCs is generally associated with positive educational outcomes, although effect sizes may be relatively small
- Social Network Analysis (Wasserman & Faust, 1994; Thomas, 2000)
  - Homophily can be a predictor of tie formation (McPherson, Smith-Lovin, & Cook, 2001)
  - Position in network associated with outcomes

## Research Questions

- What is the structure of students' residential academic and social networks? Why? What relationship does structure have with a learning community environment?
- What institutional structures influence network formation?
- Are students' positions in their residential networks related to educational outcomes? (first-semester GPA & second-semester involvement)

## Methods

- Case study: two residential communities at one institution (mid-size private in the NE) over 1.5 years
  - Arts-themed learning community ("ProArte")
  - Random-assignment residence hall floor ("Tyler 2")
- Mixed methods ("triangulation")
  - Paper surveys
  - Individual Interviews
  - Participant observation

## Methods: Surveys

- Two paper surveys (Fall 2006, Spring 2007)
- Based on common network questions, roster style
- Response rates: 92% and 85%
- 76 LC students
- 64 random-assignment students

1. On average, how many hours per week have you recently spent socializing with each person?

Name	Number of Hours
Lastname, Firstname	
Lastname, Firstname	
Lastname, Firstname	

## Methods: Qualitative

- Individual Interviews (30-60 minutes each)
  - 45 in Fall 2006
  - 42 first follow-up in Spring 2007
  - 20 second follow-up in Fall 2007
- Participant Observation
  - Floor meetings, field trips, classes, hanging out
- My Identity

## Methods: Research Population

- Generally reflected demographics of institution (**Qualitative**)
- 50% men; 50% women (**50% / 50%**)
- Race/Ethnicity:
  - 72.1% White (**75.1%**)
  - 15.7% Asian/Asian-American (**15.9%**)
  - 6.4% Latino (**4.5%**)
  - 5.7% Black (**4.5%**)
- 80% First-year students (**82%**)

## Methods: Analysis

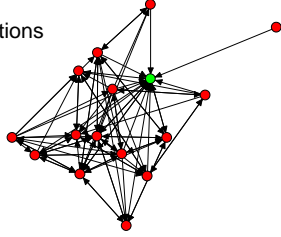
- Quantitative: survey data computerized and analyzed using Ucinet<sup>1</sup>, NetDraw<sup>2</sup>, & SAS
- Qualitative:
  - interviews recorded and transcribed
  - field notes typed
  - data categorized into 235 codes
  - analyzed for themes
- Brought types of data together for joint analysis

<sup>1</sup> (Borgatti, Everett, & Freeman, 2002)

<sup>2</sup> (Borgatti, 2002)

## Methods: Social Network Analysis

- "Network": actors + relations
- Actors or Nodes
- Relational tie
- Tie strength/value
- Directionality
- Sociogram

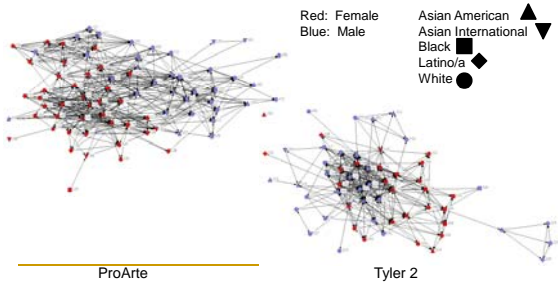


## Density as an Indicator of Student Integration

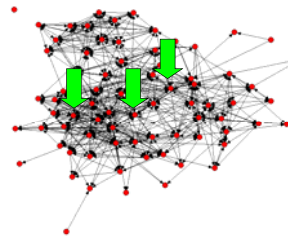
- Measures the amount of student interaction in a particular community
- Density = reported / possible ties (normalized to account for differential network size)
- Symmetrized & dichotomized ties
- Greater density = greater integration

## Results: Social, Fall 2006

- ProArte denser than Tyler 2
- Densities: ProArte – 0.1740 Tyler 2 – 0.1587



## Results: ProArte Social Fall 2006

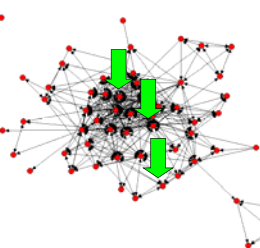


Most of my friends are people in the [ProArte] learning community, like right now. There was a lot of forced stuff in the beginning on the biggest akkles/ beads and anyway. ... I guess it was a little bit of a mix from LWS and it was a little bit of a mix from the other side of the hall. I think the floor at ProArte is a little bit of a mix of everyone there is getting along great with things cool.

-Regina  
(November 10, 2006)  
(October 20, 2007)

- Group Identity
- Women's floor cohesion
- Men's floor divisions

## Results: Tyler 2 Social Fall 2006



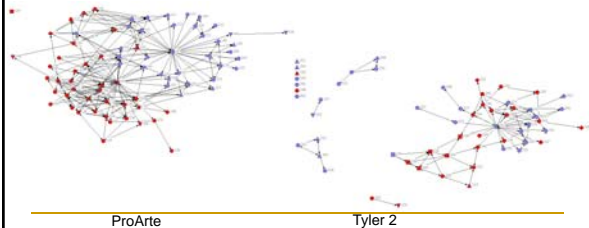
It's like everyone is each other's best friend. We have pride in our floor. We're like "[Tyler 2]"! And, uh, I tell people, everyone goes to the lounge. I mean so many people use the lounge, some of them use the lounge, but I think it's a really good place and I spent a lot of time there. I think everyone seems to get along. It's a really good energy. I like that. I'll just walk to the lounge and just hang out with other people that hang out there.

- The "Lounge Group"
- Feeling peripheral

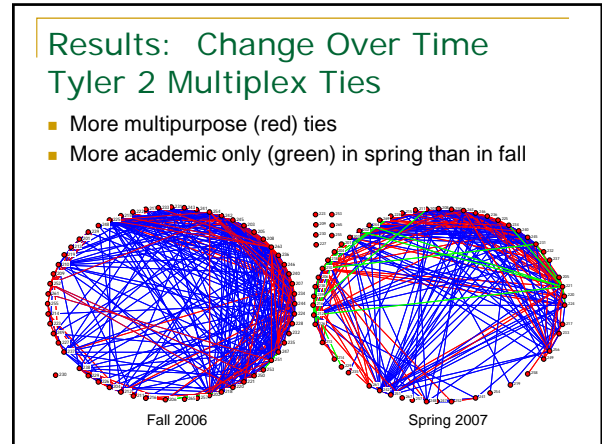
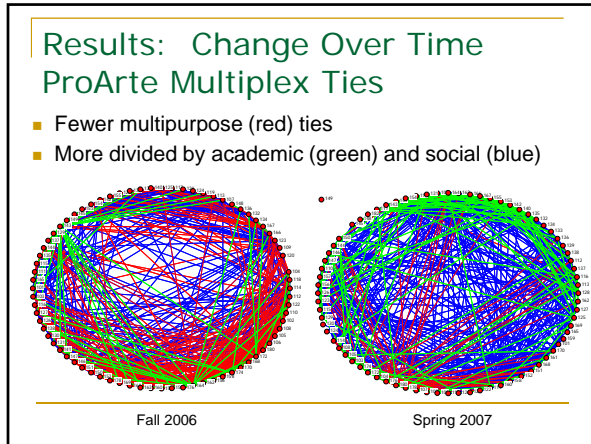
-Derek  
(September 29, 2006)

## Results: Academic, Fall 2006

- ProArte denser than Tyler 2
- Academic networks less dense than social networks
- Densities: ProArte – 0.0853 Tyler 2 – 0.0497







### Discussion

- In this study, LC (even in a simple form) seemed to influence the speed of academic integration
  - LC: academic & social ties in first semester, then emphasis on major in second semester (no LC courses)
  - Tyler 2: social ties in first semester, turn to multiplex ties in second semester, emphasis on major in second year

### Possible Role of Homophily in Network Formation

- “Homophily” = being “like” someone (e.g. same gender, race, major, class year)
- Do students create academic or social relationships based on homophily? If so, what kind(s) of homophily?
- Analysis: MRQAP regression (matrices predict a resulting matrix)

### Results: Homophily

MRQAP Analysis Using Homophily to Predict Existence of Network Ties in the Learning Community, Fall 2006

Variable	Social Network		Academic Network	
	b	β	b	β
Gender	0.15**	0.20	0.10**	0.17
Race	0.05*	0.07	0.01	0.01
Income	0.01	0.01	-0.00	-0.00
Major	0.19***	0.14	0.18***	0.19
Class Year	0.15***	0.19	-0.01	-0.01
Learning Community Member	0.11***	0.15	-	-
Enrollment in LC Music Appreciation	-	-	-0.02	-0.03
Enrollment in LC Writing	-	-	0.04**	0.07
R <sup>2</sup>	0.13***		0.07***	

\*p<.05; \*\*p<.01; \*\*\*p<.001.

### Summary of Results: Homophily

	Social Ties	Academic Ties
Learning Community	Gender, major, class year, LC membership	Gender, major, LC writing course
Random-Assignment Floor	Race, class year	Major, class year, gender

**Changes in second semester:**  
 -For LC, gender and class year became negative in academic model  
 -For RA Floor, gender not significant in academic model  
**Small r<sup>2</sup> value**

## Summary of Results: Institutional Factors

- Major socialization & decision-making
  - personal & professional identity
  - anxiety
  - other influences (family, culture, finances)
  - navigating major & other interests
- Some evidence institutional regulations constrained ties with non-majors

## Results: Network Position and Fall 2006 GPA

- Academic closeness centrality not predictive of GPA
- Higher GPA: female, second-year and above, LC writing course
- Lower GPA: HS GPA below 3.5

Variable	b	β
Academic Closeness Centrality	-0.00	-0.10
Learning Community	0.03	0.04
Student Characteristics (%)		
Gender	0.19	0.17
Female	0.05	
Race/Ethnicity		
Students of Color	-0.02	-0.10
High School GPA	0.08	
Below 3.5	-0.20	-0.32
Class Year	0.05	
Second-year and above	0.26	0.24
Academic Major		
Arts	-0.02	-0.06
Sciences	0.07	0.13
Enrolled in LC Writing Course	0.24	0.19
Intercept	1.24	
F value	0.20	
R <sup>2</sup>	0.25	
Adj. R <sup>2</sup>	0.13	
N	148	

Note: Standard errors are shown in parentheses.  
 OLS is ordinary least squares. Adj. R<sup>2</sup> is adjusted.  
 Reference groups are: Gender (male); Race/Ethnicity (White);  
 High School GPA (3.5 and above); Class Year (first-year);  
 Academic Major (Other).  
 \*p<.05. \*\*p<.01. \*\*\*p<.001.

## Results: Network Position and Spring 2007 Campus Involvement

- Social closeness centrality predictive of campus involvement
- Greater involvement: second-year and above, sciences
- Less involvement: HS GPA below 3.5

Variable	b	β
Social Closeness Centrality	0.21	0.33
Learning Community	0.00	
Student Characteristics (%)		
Gender	0.23	0.13
Female	0.12	
Race/Ethnicity		
Students of Color	-1.40	-0.09
High School GPA	0.20	
Below 3.5	-3.50	-0.27
Class Year	0.12	
Second-year and above	4.20	0.28
Academic Major		
Arts	0.78	0.06
Sciences	3.30	0.17
Intercept	4.18	
F value	3.71	
R <sup>2</sup>	0.13	
Adj. R <sup>2</sup>	0.14	
N	148	

Note: Standard errors are shown in parentheses.  
 OLS is ordinary least squares. Adj. R<sup>2</sup> is adjusted.  
 Reference groups are: Gender (male); Race/Ethnicity (White);  
 High School GPA (3.5 and above); Class Year (first-year);  
 Academic Major (Other).  
 \*p<.05. \*\*p<.01. \*\*\*p<.001.

## Conclusions

- The learning community appears to facilitate a greater number of academic and social ties among students during the first semester
- Some evidence suggests restrictive major requirements increase in-group interactions at the expense of out-group connections
- Having an initially central network position is related to having higher second-semester campus extracurricular involvement

## Limitations & Future Directions

- Not generalizable
- Student-reported outcomes; not able to use persistence as a dependent variable
- Future study with other student populations, institution types, learning community types, and other student communities; administrative structures
- Student interactions across diversity
- Development of SNA as an assessment tool

## References

- Borgatti, S.P. (2002). NetDraw: Graph Visualization Software. Harvard, MA: Analytic Technologies.
- Borgatti, S.P., Everett, M.G. & Freeman, L.C. (2002). Ucinet for Windows: Software for Social Network Analysis. Harvard, MA: Analytic Technologies.
- McPherson, M., Smith-Lovin, L., & Cook, J.M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, 27, 415-444.
- National Survey of Student Engagement. <http://nsse.iub.edu/>
- Thomas, S.L. (2000). Ties that bind: A social network approach to understanding student integration and persistence. *The Journal of Higher Education*, 71(5), 591-615.
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition*. 2nd Ed. Chicago: The University of Chicago Press.
- Wasserman, S., & Faust, K. (1994). *Social network analysis: Methods and applications*. New York: Cambridge University Press.