

# Social Network Analyses (SNA) as a method to study the structure of contacts within teams of a school for secondary education

Citation for published version (APA):

Meijs, C., & De Laat, M. (2012). Social Network Analyses (SNA) as a method to study the structure of contacts within teams of a school for secondary education. In V. Hodgson, C. Jones, M. de Laat, D. McConnell, T. Ryberg, & P. Sloep (Eds.), *Proceedings of the Eighth International Conference on Networked Learning 2012: 2nd, 3rd, 4th April, 2012, Maastricht School of Management, Maastricht, The Netherlands* (1 ed., pp. 194-202). Lancaster University. <http://www.networkedlearningconference.org.uk/past/nlc2012/abstracts/meijs.html>

## Document status and date:

Published: 01/01/2012

## Document Version:

Peer reviewed version

## Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

## General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

<https://www.ou.nl/taverne-agreement>

## Take down policy

If you believe that this document breaches copyright please contact us at:

[pure-support@ou.nl](mailto:pure-support@ou.nl)

providing details and we will investigate your claim.

Downloaded from <https://research.ou.nl/> on date: 21 Sep. 2023

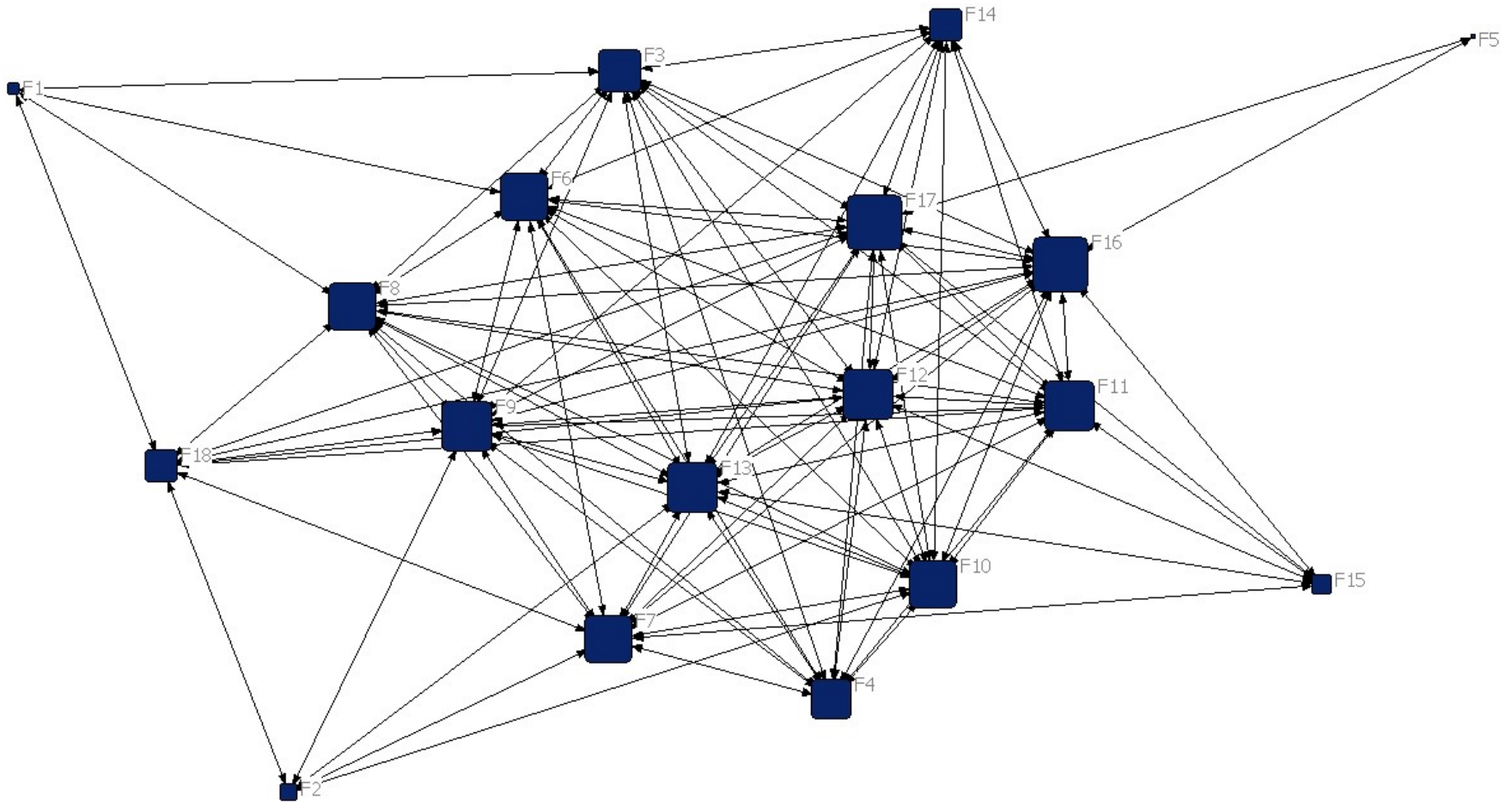
Open Universiteit  
[www.ou.nl](http://www.ou.nl)



*Social Network Analyses (SNA) as a method  
to study the structure of contacts within  
teams of a school for secondary education*

Celeste Meijs  
Maarten de Laat  
RdMC, Open University

# Introduction: SNA



# Introduction

## SNA

- Density
- Degree
- Betweenness (gatekeeper)
- Cohesion (Cliques)

# Introduction

## Team learning modes

- Fragmented
- Pooled
- Synergistic
- Continuous

# Hypotheses

1. Based on the SNA, the mode of the network can be established.
- 2.a Teachers with a management function within the team show a higher degree and a higher betweenness.
- 2.b Teachers and intern-ship teachers show a higher degree and are more likely to be part of a clique.
- 2.c Teachers with personal characteristics that are beneficial for maintaining contacts show a higher degree and a higher betweenness.

# Method

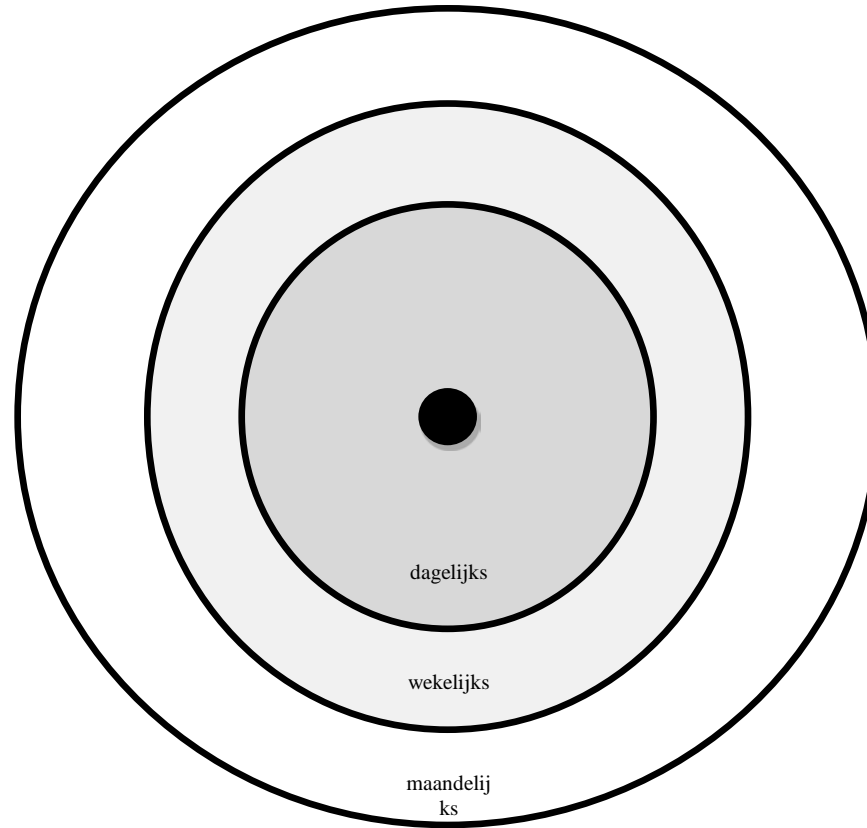
- Teachers of a school secondary education
- $n = 117$
- Response rate = 86,7%
- Contactmap

# Instrument: contactmap

<i>Number</i>	<i>Name</i>	<i>Topic</i>
1	Marc	Students
2	Thomas	Private – Organization school
3	Ryan	Personal development
.		
.		
A		
B		



# Instrument: contactmap



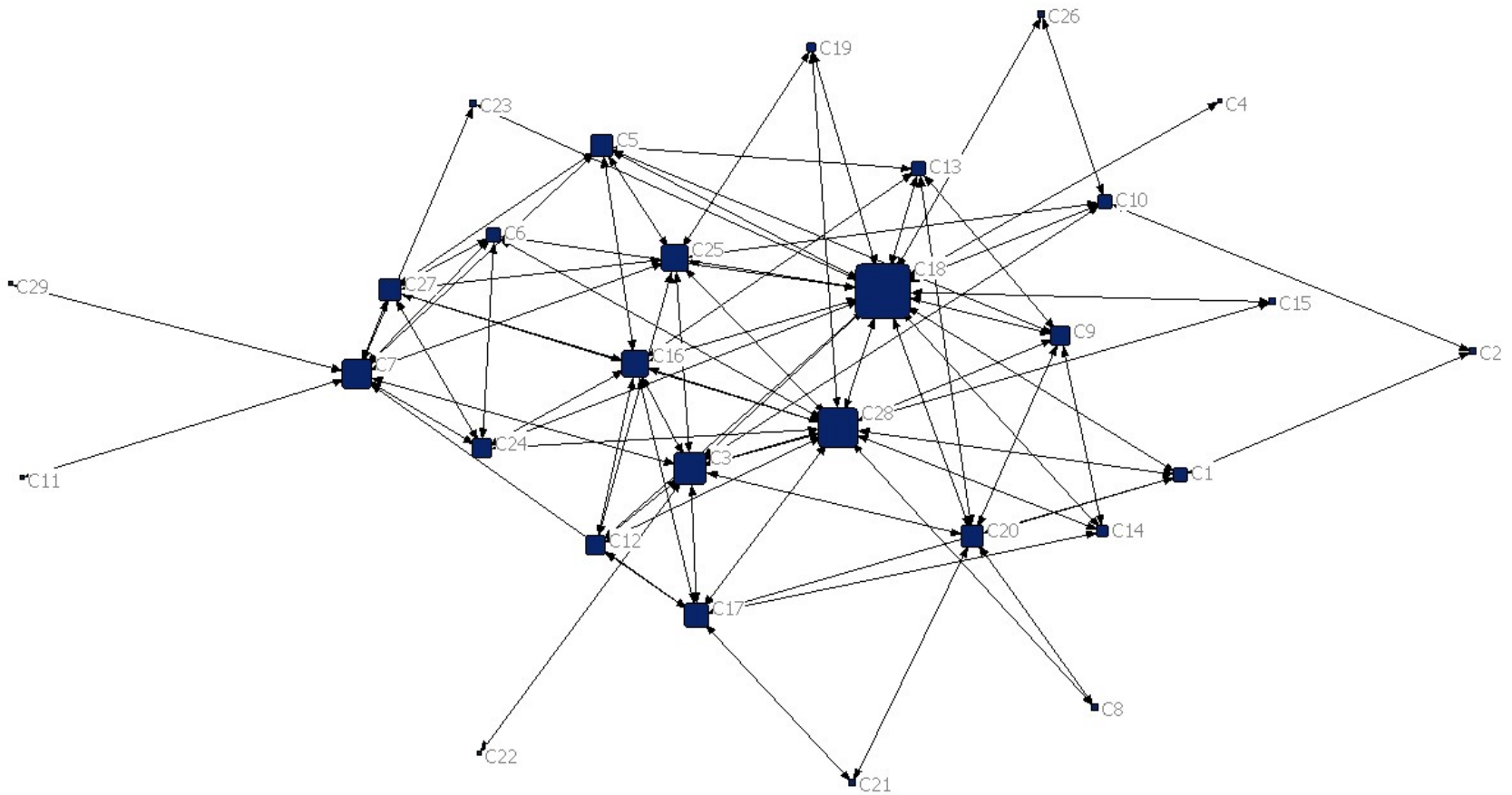
# Results

## Hypothesis 1

<i>Measure</i>	<i>Team C</i>		<i>Team F</i>	
	<i>Weekly</i>	<i>Daily</i>	<i>Weekly</i>	<i>Daily</i>
Density	20.66%	13.26%	67.82%	26.45%
Average degree	5.59	1.73	10.99	2.67
Cliques	1	4	1	1

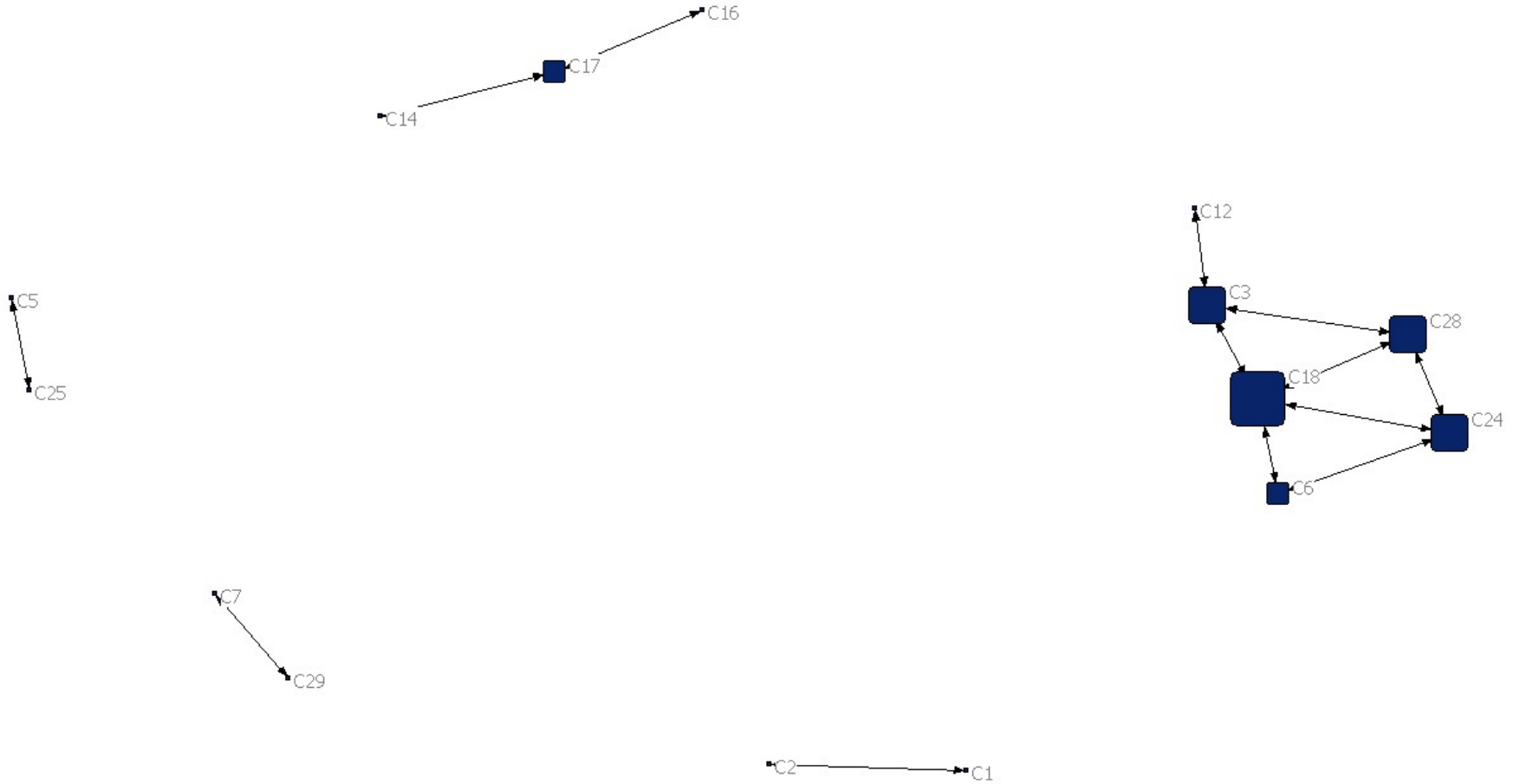
# Results

## Hypothesis 2.a



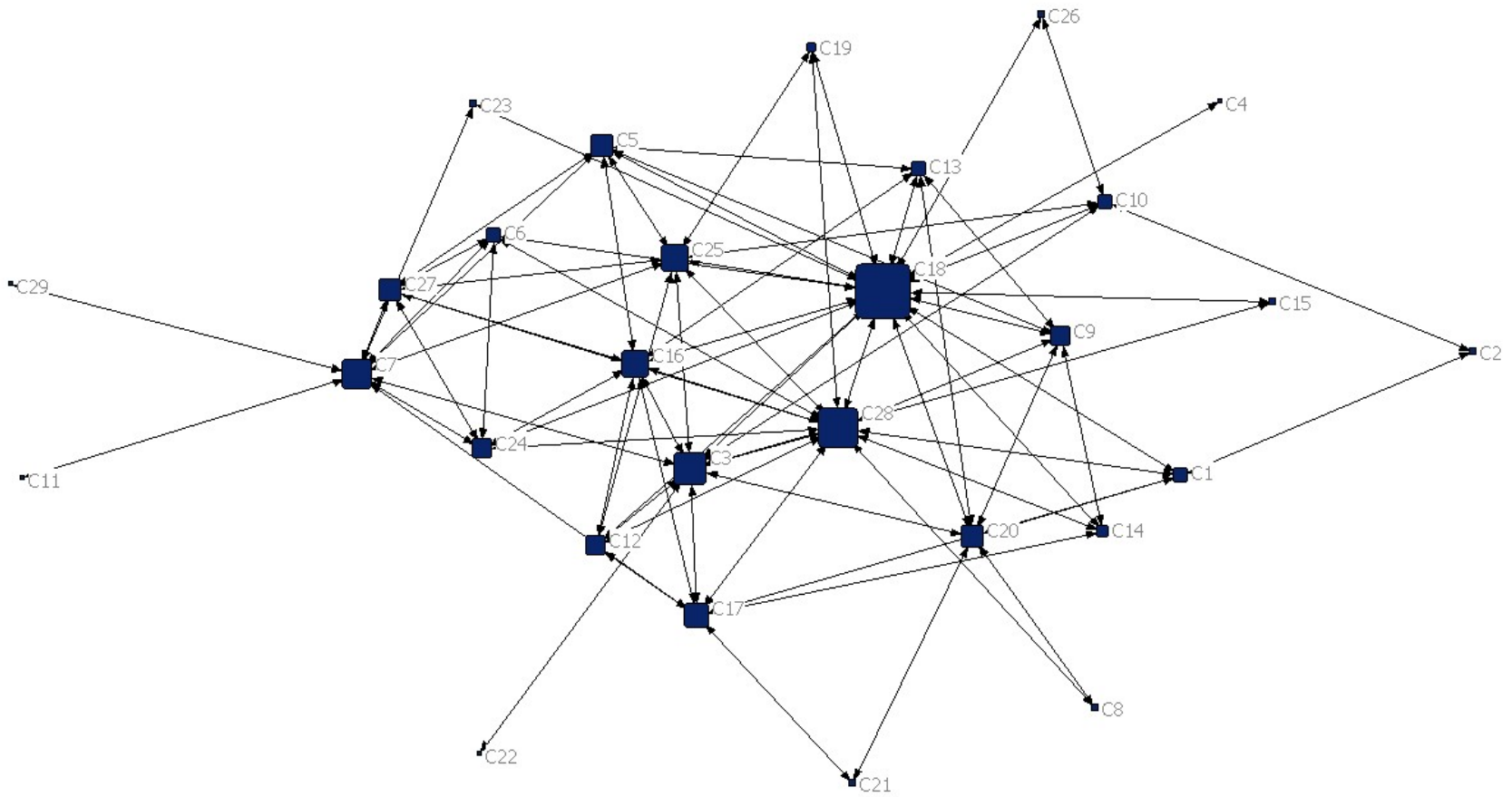
# Results

## Hypothesis 2.b



# Results

## Hypothesis 2.c



# Conclusions

- SNA can be used to establish the mode of learning within teams
- SNA can be used to visualize contacts within (and between) teams

# Take home message

SNA gives valuable information about informal social relationships that can be used to optimize the efficiency of communication structures that exist in schools as well as their potential for professional development and school innovation.

# References

- Bereiter, C. (1991). Implications of connectionism for thinking about rules. *Educational Research*, 20, 10–16.
- Bolam, R., McMahon, A., Stoll, L., Thomas, S., Wallace, M., Greenwood, A., Hawkey, K., Ingram, M., Atkinson, A., & Smith, M. (2005). *Creating and sustaining effective professional learning communities*. Research Report 637. London, UK: DfES and University of Bristol.
- Borgatti, S. P., Everett, M. G., & Freeman, L. C. (2002). Ucinet for Windows: Software for Social Network Analysis *Analytic Technologies*. Harvard.
- Coburn, C. E., & Russell, J. L. (2008). District policy and teachers' social networks. *Education Evaluation and Policy Analysis*, 30, 203-235.
- Dechant, K., Marsick, V., & Kasl, E. (1993). Towards a model of team learning. *Studies in Continuing Education*, 15(1), 1-14.
- De Laat, M.F. & Coenders, M. (2011). Communities of Practice en netwerkenleren. In: J. Kessels, & R. Poell (Eds.), *Handboek human resource development: Organiseren van het leren [Handbook human resource development: Organising learning]* (pp. 417- 428). Houten, The Netherlands: Bohn Stafleu van Logum.
- De Laat, M. F., Lally, V., Lipponen, L., & Simons, P. R. J. (2007). *Patterns of interaction in a networked learning community: Squaring the circle*. International Journal of Computer-Supported Collaborative Learning. DOI 10.1007/s11412-007-9006-4.
- Earl, L., & Katz, S. (2007). Leadership in networked learning communities: Defining the terrain. *School Leadership & Management*, 27(3), 239–258.
- Edmondson, A. (2002). Managing the risk of learning: Psychological safety in work teams. In M. West (Ed.), *International Handbook of Organizational Teamwork*. London: Blackwell.
- Hord, S. (1997). *Professional learning communities: Communities of continuous inquiry and improvement*. Austin, TX: Southwest Educational Development Laboratory.
- Jones, C., Asensio, M., & Goodyear, P. (2000). Networked learning in higher education: practitioners' perspectives. *Journal of the Association for Learning Technology*, 8(2), 18-28.
- Kasl, E., Marsick, V., & Dechant, K. (1997). Team as Learners: A research-based model of team learning. *Journal of Applied Behavioral Science*, 33, 227-246.
- Kommers, H., & Dresen, M. (2010). *Teamwerken is teamleren? Vormgeven en ontwikkelen van teams in het onderwijs*. Heerlen: The Netherlands: Ruud de Moor Centrum, Open University.
- Korenhof, M., Coenders, M., & De Laat, M.F. (Eds.) (2011). *Toolkit Netwerklernen Primair Onderwijs [Toolkit Networked Learning Primary Education]*. Heerlen: Ruud de Moor, Open Universiteit.
- Lave, J., & Wenger, E. (1991). *Situated learning- Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.
- McCormick, R., Fox, A., Carmichael, P., & Procter, R. (2010). *Researching and understanding educational networks. New Perspectives on Learning and Instruction*. New York, NY: Routledge.
- Moolenaar, N. (2010). *Ties with potential: Nature, antecedents, and consequences of social networks in school teams*. Universiteit van Amsterdam, Amsterdam, Nederland.
- Penuel, W. R., Riel, M., Joshi, A., Pearlman, L., Kim, C. M., & Frank, K. A. (2010). The alignment of the informal and formal organizational supports for reform: Implications for improving teaching in schools. *Educational Administration Quarterly*, 46(1), 57-95.
- Pil, F., & Leana, C. (2009). Applying organization research to public school reform. *Academy of Management Journal*, 56(2), 1101-24.
- Salomon, G. (Ed.) (1993). *Distributed cognitions: Psychological and educational considerations*. Cambridge, UK: Cambridge University Press.
- Schreurs, B., & De Laat, M.F. (Under review). *Network Awareness Tool: a web 2.0 tool to visualize informal learning in organizations*. Submitted to *Computers in Human Behavior*
- Sfard, A. (1998). On two metaphors for learning and the dangers of choosing just one. *Educational Researcher*, 27(2), 4-13.
- Toole, J. C. & Louis, K. S. (2002). The role of professional learning communities in international education." In K. Leithwood & P. Hallinger (Eds.), *Second International Handbook of Educational Leadership and Administration* (pp. 245-80). Dordrecht, The Netherlands: Kluwer.
- Vrasidas, C., & Glass, G. V. (2004) (Eds.). *Current perspectives in applied information technologies. Online professional development for teachers*. Greenwich, CT: Information Age Publishing.
- Wang, Y., & Li, X. (2007). *Social network analyses of interaction in online learning communities*. Paper presented at the IEEE International Conference on Advanced Learning Technologies (ICALT).
- Wasserman, S., & Faust, K. (Eds.). (1994). *Social Network Analysis: Methods and Applications*. Cambridge, England: Cambridge University Press.
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. New York, NY: Cambridge University Press.
- Wenger, E., Trayner, B., & De Laat, M.F. (2011). *Promoting and assessing value creation in communities and networks: A conceptual framework*. Heerlen: Ruud de Moor Centrum, OU.