

## ANITA WILLIAMS WOOLLEY

Tepper School of Business  
Carnegie Mellon University  
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Pittsburgh, PA 15213

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### ACADEMIC POSITIONS HELD

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#### **Carnegie Mellon University**

Associate Professor of Organizational Behavior and Theory 2015-pres

Assistant Professor of Organizational Behavior and Theory 2008 – 2015

*Tepper School of Business Faculty Giving Chair* 2009-2010

*Xerox Junior Faculty Chair* 2010-2011

#### **Harvard University**

Postdoctoral Fellow, NSF-funded “Group Brain” Project 2003-2008

J. Richard Hackman and Stephen Kosslyn, co-PIs

### EDUCATION

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**Ph.D. Organizational Behavior, Harvard University, 2003**  
Joint Doctoral Program at Harvard Business School and Department of Psychology

**A.M. Social Psychology, Harvard University, 2001**

**A.B. Psychology, Harvard University, 1995**  
Honors: *Summa Cum Laude, Phi Beta Kappa*

### RESEARCH INTERESTS

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My research is focused on the organizational, team, and individual factors that influence the effectiveness of knowledge work teams. In my lab- and field-based research, I examine:

- Theory and measurement of collective intelligence in groups
- The effects of playing offense versus defense on team process and team decision making
- The factors that lead teams to be outcome- or process-focused
- The implications of multiple team memberships for individual and team performance

## PUBLICATIONS

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### Peer-reviewed Journals (reverse chronological order)

Engel, D., Woolley, A. W., Aggarwal, I., Chabris, C. F., Takahashi, M., Nemoto, K., Kaiser, C., Kim, Y. J., & Malone, T. W. (2015). *Collective intelligence in computer-mediated collaboration emerges in different contexts and cultures*. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI 2015), Seoul, Korea.

Schuldt, J. P., Chabris, C.F., Woolley, A.W. and Hackman, J.R. (2015). Confidence in dyadic decision making: The role of individual differences. *Journal of Behavioral Decision Making* doi:10.1002/bdm.1927.

Woolley, A.W., Aggarwal, I., and Malone, T.W. (2015) "Collective Intelligence and Group Performance." *Current Directions in Psychological Science* 24: 420–24.

Engel, D., Woolley, A. W., Jing, L., Chabris, C. F., & Malone, T. W. (2014). [Reading the mind in the eyes or reading between the lines? Theory of Mind predicts collective intelligence equally well online and face-to-face](#). *PLoS ONE* 9(12).

Aggarwal, I. & Woolley, A.W. (2013) Do you see what I see? The effect of members' cognitive styles on team processes and errors. *Organizational Behavior and Human Decision Processes*, 122, 92-99.

Woolley, A.W., Bear, J.B., Chang, J.W. & DeCostanza, A.H. (2013). The effects of team strategic orientation on team process and information search. *Organizational Behavior and Human Decision Processes*, 122, 114-126.

Woolley, A.W. (2011). Playing offense vs. defense: The effects of strategic orientation on team process in competitive environments. *Organization Science*, 22, 1384-1398.

Woolley, A.W. (2011). Responses to adversarial situations and the implications for collective intelligence. *Journal of Organizational Behavior*, 32, 978-983.

Woolley, A.W. & Fuchs, E.R.H. (2011). Collective intelligence in the organization of science. *Organization Science* 22, 1359-1367.

Bear, J.B. & Woolley, A.W. (2011). The role of gender in team collaboration and performance. *Interdisciplinary Science Reviews*, 36, 146-153.

O'Leary, M.B., Mortensen, M. & Woolley, A.W. (2011). Multiple team membership: A theoretical model of its effects on productivity and learning for individuals and teams. *Academy of Management Review*, 36, 461-478.

Woolley, A.W., Chabris, C.F., Pentland, A., Hashmi, N. & Malone, T.M. (2010). Evidence for a collective intelligence factor in the performance of human groups. *Science*, 330, 686-688.

Woolley, A. W. (2009). Means versus Ends: Implications of outcome and process focus for team adaptation and performance. *Organization Science*, 20, 500-515.

Woolley, A.W. (2009). Putting first things first: Task focus and team performance. *Journal of Organizational Behavior*, 30, 427-452.

^Woolley, A. W., Gerbasi, M. E., Chabris, C. F., Kosslyn, S. M., & Hackman, J. R. (2008). Bringing in the experts: How team composition and work strategy jointly shape analytic effectiveness. *Small Group Research*, 39, 352-371.

^Finalist for best paper of the year in the journal

Woolley, A. W., Hackman, J. R., Jerde, T. J., Chabris, C. F., Bennett, S. L., & Kosslyn, S. M. (2007). Using brain-based measures to compose teams: How individual capabilities and team collaboration strategies jointly shape performance. *Social Neuroscience*, 2, 96-105.

Woolley, S.L., Benjamin, W.J., & Woolley, A.W. (2004) Construct validity of a self-report measure of teacher beliefs related to constructivist and behaviorist theories. *Educational and Psychological Measurement*, 62, 319-331.

Woolley, A.W. (1998). Effects of intervention content and timing on group task performance. *Journal of Applied Behavioral Science*, 34, 30-46.

### **Refereed Conference Proceedings**

Chang, J.W., Chow, R.M., Woolley, A.W. (2013). High-status but low-performing: Effects of group status on information exchange and group outcome. *Academy of Management Best Paper Proceedings*.

Woolley, A.W., Bear, J.B., Chang, J.W., DeCostanza, A.W. (2011). The effects of team strategic orientation on team strategy and information search in competitive environments. *Academy of Management Best Paper Proceedings*.

Woolley, A.W. (2009) Offensive versus defensive strategic orientation and collective information processing in teams. *Academy of Management Best Paper Proceedings*.

## Book Chapters (most recent first)

- Woolley, A.W., Aggarwal, I., & Malone, T.W. (2015). Collective intelligence in teams and organizations. In T.W. Malone & M. Bernstein (Eds.) *Collective Intelligence*. Cambridge, MA: MIT Press.
- Woolley, A.W., & Hashmi, N. (2013). Cultivating collective intelligence in online groups. In P. Michelucci (Ed.) *Handbook of Human Computation*. New York, NY: Springer Science+Business Media.
- Woolley, A.W. (2013). Emerging understanding of group-related characteristics: Collective intelligence. *New Directions in Assessing Performance Potential of Individuals and Groups*, National Research Council, Committee on Measuring Human Capabilities: Performance Potential of Individuals and Collectives, Board on Behavioral, Cognitive, and Sensory Sciences. Division of Behavioral and Social Sciences Education. Washington, DC.
- Aggarwal, I., & Woolley, A.W. (2012). Two perspectives on intellectual capital and innovation in teams: Collective intelligence and cognitive diversity. In C. Mukhopadhyay (Ed.), *Driving the economy through innovation and entrepreneurship* (pp. 495-502). Bangalore: Springer.
- Roloff, K.S., Woolley, A.W. and Edmondson, A.C. (2011) “The contribution of teams to organizational learning,” in M. Easterby-Smith & M. Lyles, (Eds.) *International handbook of organizational learning and knowledge management, Second Edition*, 249-272. London: Blackwell.
- O’Leary, M.B., Mortensen, M. and Woolley, A.W. (2011) “Multi-team membership in relation to multi-team systems,” in S. Zaccaro, M. Marks & L. DeChurch (Eds.), *Multi-team systems: An organization form for dynamic and complex environments*. New York, NY: Psychology Press/ Taylor & Francis Group, LLC.
- Hackman, J. R., & Woolley, A. W. (in press). Creating and leading analytic teams. In R. L. Rees & J. W. Harris (Eds.), *A handbook of the psychology of intelligence analysis: The human factor*. Burlington, MA: Centra Technology.
- Woolley, A.W. (2009) Organizations. In J.M. Levine & M.A. Hogg (Eds.), *Encyclopedia of Group Processes and Intergroup Relations*. Thousand Oaks, CA: Sage Publications.
- Caruso, H.M. & Woolley, A. W. (2008). Manifesting the value of cognitive diversity in teams: The critical role of emergent interdependence. In M. A. Neale, E. Mannix & K. Phillips (Eds.), *Research on managing groups and teams: Groups and diversity* (Vol. 9). Oxford, UK: Elsevier Science Press.
- Mortensen, M., Woolley, A. W., & O’Leary, M. B. (2007) Conditions enabling effective multiple team membership. In K. Crowston, S. Sieber, & E. Wynn (Eds.), *Virtuality and Virtualization* Vol. 236: 215-228. Portland, OR: Springer Publishers.

Edmondson, A. C., & Woolley, A. W. (2003). Understanding outcomes of organizational learning interventions. In M. Easterby-Smith & M. Lyles (Eds.), *International handbook on organizational learning and knowledge management*. London: Blackwell.

## **Managerial Publications and Published Talks**

Woolley, A.W. (2013). "Expertise and collective intelligence: when teams are (and are not) more than the sum of their parts", in Wageman, R. (ed.), *Team Effectiveness: The Marketing & Management Collection*, Henry Stewart Talks Ltd, London (online at <http://hstalks.com/?t=MM1713492-WilliamsWoolley>)

Woolley, A.W. & Malone, T.W. (2011). What makes a team smarter? *Harvard Business Review*, June, 32-33.

O'Leary, M.B., Mortensen, M. & Woolley, A.W. (2010) Multiple team membership: Working together effectively before it all goes downhill. *IESE Insight*, 6, 52-58.

## **Cases**

Polzer, J.T. & Woolley, A.W. (2001). Chapter Enrichment Program Teams at the American Red Cross. Case N9-402-042. Boston: Harvard Business School Press.

## **Papers Under Review**

Aggarwal, I. & Woolley, A.W. Composition, Cognition and Creativity in Teams. Revise and Resubmit at *Management Science*

Chang, J.W., Chow, R.M. & Woolley, A.W. Effects of Inter-group Status on the Pursuit of Intra-group Status.

Cruz, K.S., Pinto, J. & Woolley, A.W. Team focus and team member deviance: The mediating role of action identification.

Mayo, A.M., Woolley, A.W. & Chow, R.M. The countervailing effects of gender diversity in expertise use: Disentangling participation and influence.

\*Riedl, C., & Woolley, A.W. From crowds to collaborators: Initiating effort & collaboration among online creative workers. Revise and Resubmit at *Academy of Management Discoveries*

\*authorship order is alphabetical

Woolley, A.W. & Aggarwal, I. Collective intelligence, interpersonal relationships, and group learning. Revise and Resubmit at *Organization Science*

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**REFEREED CONFERENCE PRESENTATIONS (last 5 years, in reverse chronological order)**

Aggarwal, I., Woolley, A. W., Chabris, C. F., and Malone, T. W. (2015). *Cognitive diversity, collective intelligence, and learning in teams*. Paper presented at the 2015 Collective Intelligence Conference, Santa Clara, CA.

Kim, Y. J., Engel, D., Aggarwal, I., Woolley, A. W., & Malone, T. W. (2015). *Retention of participants in online collective intelligence tests involving a panel design*. Panel presented at the 2015 annual convention of the International Communication Association. San Juan, Puerto Rico.

Kim, Y. J., Engel, D., Woolley, A. W., Lin, J., McArthur, N., & Malone, T. W. (2015). *Work together, play smart: Collective intelligence in League of Legends teams*. Paper presented at the 2015 Collective Intelligence Conference, Santa Clara, CA.

Mayo, A.T., Woolley, A.W., and Chow, R.M. (2015). *Matching contribution to expertise: the effect on group decision making and the role of gender composition*. Annual meeting of the Interdisciplinary Network for Groups Research (INGRoup), Pittsburgh, PA.

Woolley, A. W., Kim, Y. J., & Aggarwal, I. (2015). *Using technologies to reliably measure collective intelligence of teams*. Annual meeting of the Interdisciplinary Network for Groups Research (INGRoup), Pittsburgh, PA.

Vacharkulksemsuk, T., Phillips, K., Akinola, M., Woolley, A.W. & Toosi, N.R. (2014). *Leveraging the value of diversity in teams: Four useful processes*. Symposium presented at the annual meeting of the Society of Experimental and Social Psychology, Columbus, OH.

Engel, D., Woolley, A. W., Xing, L. X., Chabris, C. F., & Malone, T. W. (2014). *Social perception and collective intelligence in online and face-to-face teams*. Collective Intelligence 2014: Boston, MA.

Mayo, A.T., Woolley, A.W., Chang, J.W., Chow, R.M. (2014). *Do Women Make Groups Smarter? Understanding the Effects of Gender and Competition on Collective Intelligence*. Presented at the annual meeting of the Interdisciplinary Network for Groups Research (INGRoup), Raleigh, NC.

Woolley, A.W., Aven, B.L., Zhang, Y., O'Leary, M.B. & Mortensen, M. (2014). *Multiple team membership, autonomy, and teammate novelty*. Presented at the annual meeting of the Interdisciplinary Network for Groups Research (INGRoup), Raleigh, NC.

Aggarwal, I., Molinaro, M., Woolley, A.W. (2013). *Cognitive Versatility: A New Lens for Understanding Team Diversity*. Presented at the annual meeting of the Interdisciplinary Network for Groups Research (INGRoup), Atlanta, GA.

Chang, J.W., Chow, R.M., Woolley, A.W. (2013). *The Effects of Group Status and Outcome Interdependence on Information Exchange and Joint Outcome in Negotiating Groups*. Presented at the annual Conference of the International Association for Conflict Management, Tacoma, WA.

Chang, J.W., Chow, R.M., Woolley, A.W. (2013). *High-Status But Low-Performing: Effects of Group Status on Information Exchange and Group Outcome*. Paper presented at the annual meeting of the Academy of Management, Lake Buena Vista, FL.

Woolley, A.W., Aven, B.L., Zhang, E., O'Leary, M.B., Mortensen, M. (2013). *Multiple Team Membership over Time: Social Networks and How the Autonomy to Switch Teams Affects Individual and Team Productivity*. Paper presented at the annual meeting of the Academy of Management, Lake Buena Vista, FL.

Aggarwal, I. & Woolley, A.W. (2012). *Cognitive style diversity and team creativity*. Paper presented at the annual meeting of the Interdisciplinary Network for Groups Research (INGRoup), Chicago, IL.

Lakhani, K., Boudreau, K., Gaule, P., Riedl, C., Woolley, A.W. (2012). *Catalyzing collaboration amongst strangers: Field experimental evidence*. Paper presented at INFORMS annual meeting, Phoenix, AZ.

Aggarwal, I. & Woolley, A.W. (2012). *Two perspectives on intellectual capital and innovation in teams*. Paper presented at the International Conference on Technology Management, Indian Institute of Science, Bangalore, India.

Aggarwal, I., Woolley, A.W., Chabris, C., & Malone, T. (2012). *The Effects of Cognitive Diversity on Collective Intelligence and Team Learning*. Paper presented at the 12<sup>th</sup> Annual Trans-Atlantic Doctoral Conference, London Business School, London, England.

Aggarwal, I., Woolley, A.W., Chabris, C., & Malone, T. (2012). *The Effects of Cognitive Diversity on Collective Intelligence and Team Learning*. Symposium presentation at the 13<sup>th</sup> Meeting of the Society for Personality and Social Psychology, San Diego, CA.

Aggarwal, I., & Woolley, A.W. (2011). *The effects of members' cognitive styles on team processes and performance*. Presented at the annual meeting of the Interdisciplinary Network for Groups Research, Minneapolis, MN.

Aggarwal, I., Woolley, A.W., Chabris, C.F., Hashmi, N. & Malone, T.W. (2011) *The relationship between collective intelligence, cognitive diversity and team learning*. Presented at the annual meeting of the Academy of Management, San Antonio, TX.

Woolley, A.W., Bear, J., Chang, J.W., DeCostanza, A.H. (2011). *The effects of team strategic orientation on team strategy and information search in competitive environments*. Presented at the annual meeting of the Academy of Management, San Antonio, TX.

Woolley, A.W., Lakhani, K. & Boudreau, K. (2011). *From strangers to collaborators: Field experimental evidence underlying team formation for creative problem-solvers*. Presented at the Organizational Science Winter Conference XVII, Steamboat Springs, CO.

Aggarwal, I., Woolley, A.W., Chabris, C.F., Hashmi, N. & Malone, T.W. (2010). *From "Is Diversity Good" to "How much diversity is good?" The relationship between cognitive style and collective intelligence*. Presented at the annual meeting of the Interdisciplinary Network for Groups Research, Washington, D.C.

Aggarwal, I. & Woolley, A.W. (2010). *Do you see what I see? The effect of members' cognitive styles on team processes and performance*. Presented at the annual meeting of the Academy of Management, Montreal, Quebec, Canada.

Bear, J. & Woolley, A.W. (2010). *Don't talk about it: Active avoidance in organizations*. Presented at the annual meeting of the Academy of Management, Montreal, Quebec, Canada.

O'Leary, M.B., Mortensen, M., & Woolley, A.W. (2010). *Multiple team membership: A theoretical model of its effects on productivity and learning for individuals, teams, and organizations*. Presented at the annual meeting of the Interdisciplinary Network for Groups Research, Washington, D.C.

Woolley, A.W., Bear, J., Chang, J.W., & Hunter, A. (2010). *Shifting Gears: The Effects of Strategic Orientation on Situational Perceptions and Information Search in Teams*. Presented at the annual meeting of the Interdisciplinary Network for Groups Research, Washington, D.C.

Woolley, A.W. (2009) *A process model of strategic orientation in competitive environments*. Presented at the annual meeting of the Academy of Management.

Woolley, A.W. & Aggarwal, I. (2009) *Which side are you on? Offense vs. defense and team process*. Presented at the annual meeting of the Interdisciplinary Network for Groups Research, Colorado Springs, CO.

Woolley, A.W., Malone, T., Chabris, C.F. (2009) *Measuring Collective Intelligence*. Presented at the annual meeting of the Interdisciplinary Network for Groups Research, Colorado Springs, CO.

## **FELLOWSHIPS AND AWARDS**

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2011	Best Paper Award, Managerial and Organizational Cognition Division, Academy of Management
2010	Xerox Junior Faculty Chair, Tepper School of Business, Carnegie Mellon University
2010	Roman Weil Prize for the best unpublished paper on problem-solving, Carnegie Mellon University
2009	Faculty Giving Chair, Tepper School of Business, Carnegie Mellon University
2008	Finalist, Best paper of the year, <i>Small Group Research</i>
2007	Bok Center Certificate of Distinction in Teaching, Harvard University
2006	Best Research Proposal, Academy of Management Managerial and Organizational Cognition Division “Cognition in the Rough” Workshop

## **COMPETITIVE GRANTS RECEIVED**

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- “The Implications of Playing Offense versus Defense for Team Information Processing and Performance”: This project was an investigation of the effects of offensive and defensive strategic orientation on team information processing and decision making. This grant is funding both laboratory and field research of these effects in both civilian and military populations.
  - Source: Army Research Institute, 2008-2010
- “Investigating collective intelligence”: This project built pilot data collected previously to explore how the construct of collective intelligence generalizes to groups of different sizes as well as online groups. The intended final product is a short test battery that can be used to measure collective intelligence and predict performance of teams on a wide range of tasks.
  - Source: Army Research Office, 2009-present
  - Co-Principal Investigators: Thomas Malone (MIT); Christopher Chabris (Union College)
- “Measuring and modeling collective intelligence”: This project built on work demonstrating the existence of a “collective intelligence” in groups which is not significantly predicted by the intelligence of individual group members. In this project, we propose to test how the use of computer-based aids can enhance critical coordination processes and possibly increase collective intelligence. Data collected in the lab will also support a computer modeling effort to explore how other changes in group structure (e.g. size, incentives, resources) would further alter collective intelligence.
  - Source: National Science Foundation, Human Computer Collaboration Program, 2010-2012
  - Co-Principal Investigators: Thomas Malone (MIT), Christopher Chabris (Union College).
- "Improving collective intelligence: Investigating the effects of online groups, group size, and gender composition": Building on previous work by the investigators, the project will first develop an online test for collective intelligence. Then it will compare the results of online and face-to-face groups taking this new test with previous results for groups taking an offline version

of the test. Next the project will use this test to systematically measure the collective intelligence of online groups that range in size from 2 to 20 people. This will lay the foundation for exploring whether larger online groups can take advantage of the increased resources that more people bring without suffering as much from the process losses that usually accompany increased group size in face-to-face groups. Finally, the project will systematically measure the collective intelligence of groups with varying proportions of women. In doing so, we will test one particularly promising explanation for a gender effect on group performance: that groups with more women are less interpersonally competitive which leads to higher collective intelligence.

- Source: National Science Foundation, Virtual Organizations as Sociotechnical Systems (VOSS) Program, 2013-2016
  - Co-Principal Investigators: Rosalind Chow (CMU), Thomas Malone (MIT), Christopher Chabris (Union College).
- "Cultivating Collective Intelligence in Teams at PNC": Team performance is increasingly important to the viability of financial and professional service firms. This project will make use of HR data to examine performance of teams at PNC for factors predicting collective intelligence—or performance capability emerging from the coordination and collaboration of team members, varying from expectations given the competitive environment and capabilities of team members. We will examine archival data sources to identify the degree to which unexplained variance exists in team performance, and factors that may account for it such as team member characteristics and team communication and collaboration practices. In a third phase of the project, to be informed by analyses carried out in Phases I and II, we propose to collect additional information via interviews, observations, or surveys to further understand factors accounting for variance in collective intelligence at PNC and identify potential levers for management intervention.
    - Source: PNC Center for Financial Services Innovation, Tepper School of Business, June 2014-May, 2016
  - “Tasks and Transitions: An investigation of Transactive Memory Systems in Teams Performing Multi-Task Activities”: This project will explore the effects of task type and sequencing on the formation of transactive memory systems (TMS) in groups, as well as the connection between TMS and collective intelligence
    - Source: Army Research Office, 2015-2017
    - Co-Principal Investigators: Linda Argote (CMU), Kyle Lewis (UC Santa Barbara) and Andrea Hollingshead (Univ Southern California)

## **PROFESSIONAL SERVICE**

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### **Conferences**

Program Committee, Collective Intelligence 2014

Local Arrangements Chair, 2015 Annual meeting of Interdisciplinary Network of Groups Researchers (INGRoup)

## **Editorial Board**

*Academy of Management Discoveries* (2015-pres)

*Organization Science* (2009-2010, 2014-pres)

*Small Group Research* (2008-pres)

*Human Computation* (2014-pres)

## **Ad-Hoc Reviewer**

*Academy of Management Journal*

*Academy of Management Perspectives*

*Administrative Science Quarterly*

*Journal of Applied Social Psychology*

*Journal of Organizational Behavior*

*National Science Foundation*

*Organizational Behavior and Human Decision Processes*

## **PROFESSIONAL EXPERIENCE**

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### **MITRE, Inc.**

Bedford, MA

Consultant, November, 2004-June 2008. Work with a government sponsor to observe analytic simulations and design and teach a course on analytic teams, leadership, and methods for practicing intelligence analysts and team leaders. Developed experiential exercises based on real threat scenarios and delivered relevant lecture material.

### **Research International**

Cambridge, MA

Senior Research Analyst, March, 1997 through July, 1998. Designed and managed market research studies focusing on customer satisfaction and loyalty, new product development, and advertisement testing. Analyzed quantitative and qualitative data, produced reports and presentations for clients. Conducted executive interviews and moderated focus groups.

### **DIA•logos, Inc.**

Cambridge, MA

Project Manager, August, 1995 through March, 1997. Managed corporate consulting projects, organized and marketed educational seminars, designed marketing and learning materials, and managed operations for a start-up consulting firm specializing in interpersonal communication.