Online Ethics Center
FOR ENGINEERING AND SCIENCE

Mentors and Trainees Bibliography

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Description

A bibliography on mentoring, the responsibilities of mentors and mentees, as well as ethical issues that can arise as part of the student/advisor relationship.Includes guidelines and tools to help students find potential mentors, plan their career paths, and facilitate communication between advisors and students.

Body

Web Resources

AAAS Science Mentoring Research
Maintained by the American Association for the Advancement of Science, this website provides guidance and resources for researchers interested in doing research on mentoring as well as resources for individuals looking to improve their mentoring skills.

AAAS: My Individual Development Plan (IDP)
An individual development plan (IDP) helps you explore career possibilities and set goals to follow the career path that fits you best. This site includes exercises, ideals and tools to help explore potential career paths and interests.

ASU CareerWISE
A website Arizona State University has developed to help female doctoral students in STEM disciplines build their careers.

American Society of Civil Engineers Mentoring Site
A website that provides suggestions and information about mentoring. It is particularly suited for engineers.

Federation of American Societies for Experimental Biology (FASEB): Individual Development Plan for Postdoctoral Fellows
Discusses the importance of an individual development plan for postdoctoral fellows, and provides guidance for postdoc fellows and their mentors in how to develop a plan of this kind.

Introduction to Mentoring: A Guide for Mentors and Mentees
A guide put together by the American Psychological Association on the stages of mentoring, the forms mentoring can take, and the etiquette and ethics of mentoring.

Mentoring Advice by Science Careers
A website developed by Science *to gather information and resources on mentoring programs.*

MentorNet
A non-profit organization that provides online mentoring for students in STEM fields by connecting them with professionals in the workplace.

Million Women Mentors
A website that aims at engaging mentors so that they can ultimately help young women to succeed in their STEM-discipline careers. Million Women Mentors is a STEMConnector initiative.

National Institutes of Health: Thoughts on Choosing a Research Mentor
Provides a video and guidance on why research mentors are important, how to approach a potential mentor about joining their research group, and choosing the right lab to join.

STEM Mentors by the Huffington Post
A thematic website describing different mentoring types. Developed by the Huffington Post.

Books and Guides

Dean, Donna J. 2009. *Getting the Most Out Of Your Mentoring Relationships: a handbook for women in STEM.* New York: Springer.
This book discusses the important role mentoring plays in the education of students in the areas of science, engineering and mathematics, and discusses a number of key considerations and best practices for students looking to get the most of their mentoring relationships during their academic career.

Ford, D.C., J. Didion and S. J. Bird. 2005. *A Hand Up: Women Mentoring Women in Science.* Washington, D.C.: Association for Women in Science.
Through interviews and essays, both veteran women and others new to the fields of science, mathematics, technology and engineering offer specific and practical insights, advice, and assistance to females who would enter scientific fields and to those already there. The publication concludes with a section guiding aspiring women scientists to organizations, electronic resources, and how-to practical recommendations in their searches for successful professional outcomes.

Johnson, W. B. 2007. *On being a mentor: A guide for higher education faculty*. Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.
This book has the goal of guiding for faculty in higher education who wish to mentor both students and junior faculty. It features strategies, guidelines, best practices, and recommendations for professors who wish to excel in this area. It includes case studies and step-by-step guidelines to illuminate the process of mentoring.

Philips-Jones, Linda. (2004). Effective mentoring relationships: The mentee's role. The Mentoring Group.
A short but helpful article discussing ways in which mentees can help shape and manage their relationship with their advisers.

Mentoring International Post Docs. 2004. Children's Hospital of Philadelphia, Joseph Stokes Jr. Research Institute.
As science in the United States becomes more and more international, mentors are faced with a number of challenges in their work with international post-doctoral students and colleagues. These challenges have the potential to become barriers to the success of these scientists resulting from decreased productivity, low morale, and failure to achieve career goals. The Children's Hospital of Philadelphia has put together a series of small film vignettes and an instructors guide that is meant to help identify issues and raise sensitivity the sensitivity of mentors of cultural issues

that may come into play in training of international postdocs.

National Academy of Sciences. 1997. Adviser, teacher, role model, friend : on being a mentor to students in science and engineering. Washington, D.C. National Academies Press.
This guide offers helpful advice on how teachers, administrators, and career advisers in science and engineering can become better mentors to their students. An html version is available through the National Academies Press Web site.

Riskin, E. et al. 2005. Mentoring for Academic Careers in Engineering: Proceedings of the PAESMEM/Stanford School of Engineering Workshop
Focusing of the field of engineering, this workshop focused on the needs, goals, methods and best p r actices for mentoring students interested in an academic career. The site includes a summary of the workshop findings and covers issues such as best practices for early and midcareer mentoring, developing academic leaders, and supporting women professors with families.

University of Michigan, Ann Arbor. Rackham Graduate School. *How to Mentor Graduate Students: A Guide for Faculty*.
An excellent guide that outlines the expectations for mentors of graduate students as well as advice on how to be a good mentor.

University of Michigan, Ann Arbor. Rackham Graduate School. *How to Get the Mentoring You Want: A Guide for Graduate Students at a Diverse University*.
A guide to help graduate students of diverse backgrounds find and keep a mentor. Discusses challenged faced in graduate school, expectations for advisors and students in mentoring relationships, and best practices for building a network of faculty, staff and colleagues who can help you through your graduate career.

Zachary, L.J. 2009. The mentee's guide: Making mentoring work for you. Hoboken, NJ: John Wiley & Sons, Inc.
Book focused on helping individuals get the most out of their mentoring experience including advice on how to build trust, work effectively with your mentor, clarify your goals, and explore if you are ready to also be a mentor.

Zachary, L.J. 2012. The Mentor's Guide: Facilitating Effective Learning Relationships. (2nd ed.) Hoboken, NJ: John Wiley and Sons, Inc.
Book focused on helping professionals and faculty become better mentors, including exploring the mentor's role in the learning experience, the collaborative nature of the mentoring relationship, and provides hands-on advice and exercises

for strengthening and shaping mentoring partnerships.

Journal Articles

Ahn, Benjamin 2014. "Creation of an instrument to measure graduate student and postdoctoral mentoring abilities in engineering and science undergraduate research settings." *PhD Diss. Purdue University*.
In his PhD dissertation, Ahn discusses the results of a survey conducted to assess, through interviews and surveys, how undergraduate research benefits from graduate students' mentoring. The study aims at improving the mentoring experience.

Alberts, Bruce 2009. "On Becoming a Scientist." *Science* 326:916.
In the editorial, Editor-in-Chief Alberts discusses the role of mentoring in graduate students' learning experiences. By sharing his own story as a graduate student at Harvard, he points out that what one learns from a mentor goes beyond ordinary research skills, and involves refining one's reasoning and critical thinking.

Anderson, Melissa S., Karen Seashore Louis, and Jason Earle. 1994. "Disciplinary and Departmental Effects on Observations of Faculty and Graduate Student Misconduct." *The Journal of Higher Education* 65(3): 331-50. doi:10.2307/2943971.
In their journal article, Anderson, Louis, and Earle investigate the consequences of departmental structure on students' observations of misconduct. They argue, "departmental climate is the strongest predictor of overall misconduct."

Anderson, D. D., & Shore, W. J. 2008. Ethical Issues and Concerns Associated With Mentoring Undergraduate Students. *Ethics & Behavior, 18* (1), 1-25. doi:10.1080/10508420701519577
This article explores the important role of mentors in a student's academic life, and discusses some of the differences between mentoring graduate and undergraduate students.

Anderson et al. 2007. What Do Mentoring and Training in the Responsible Conduct of Research Have To Do With Scientists' Misbehavior? Findings From a National Survey of NIH-funded Scientists, *Academic Medicine*, 82(9): 853-860.

The authors of this paper examined training in the responsible conduct of research and mentoring in relation to behaviors that may compromise the integrity of science, and found that the effectiveness of research ethics training is in question. Mentoring has the potential to influence behavior in both postitive and negative ways.

Belfort, Marlene. 2003. "Microbiological Moms, Their Sisters and Brothers-the Give and Take." *ASM News-American Society for Microbiology* 69: 553-557.
In the conference paper, Belfort discusses the difficulties women encounter in their careers in science. She unpacks the different tasks that a scientist is expected to perform, which include mentoring among others. She claims that women are ideally provide valuable models in both science and life itself.

Bell, A. and L. Treleaven. 2011. "Looking for Professor Right: Mentee Selection of Mentors in a Formal Mentoring Program." *Higher Education* 61(5):45-56.
This paper presents a detailed analysis of the pairing process in an academic mentoring program that has implications for building a mentoring culture in higher education. The program, which began with a pilot and has continued for five years with one hundred and twenty one participants, was conducted with mentees selecting their own mentor from a pool of mentors who volunteered to be part of the program. This study at a research-intensive university demonstrates that when the pairing process is tailored to individual mentees, they are comfortable selecting a mentor and to then develop a successful mentoring relationship.

Bird, Stephanie J. 2001. Mentors, advisors and supervisors: their role in teaching responsible research conduct. *Science and Engineering Ethics* 7(4): 455-468.
The article discusses the different roles of a mentor and research supervisor. While a research or thesis advisor can be a mentor, the two roles are not interchangeable. The author discusses some of the responsibilities of mentoring and ethical issues raised in this kind of relationship. She finishes by discussing the important role mentors play in the professional success of students and their ability to teach students about responsible conduct of research.

Blicharska, Malgorzata, and Grzegorz Mikusiński. 2015. "Developing world: Use mentoring to fix science inequality." *Nature* 571: 271-271. doi:10.1038/517271d
In the article, Blicharska and Grzegorz argue for scientists who work in developed countries to mentor scientists who are affiliated with universities in developing

countries. They also address mentoring as a means to help scientists spread knowledge from developed to developing countries.

Brennan, L. L., & Perkins, R. D. 2012. Can Virtual Mentors Add Value to Business Ethics Education? A Case-Based Exploratory Study. *Journal of Business Ethics Education, 9*(1), 165-192.
Though coming from the area of business, this article examines the educational benefits of a virtual mentor program used to supplement classroom teaching of ethics, by connecting students with practitioners through computer-mediated communications. Virtual mentoring can be a valuable and inexpensive way to extend the classroom lectures and discussion with real-world perspectives. In addition, it can serve additional purposes for students, such as learning how to develop a relationship with a mentor, and improving application of ethical concepts in practical situations.

Clark, Clayton J., Tiffany W. Ardley, and Jason T. Black. 2015. "The program of excellence in STEM: Involvement of traditionally underrepresented students in STEM education through research and mentoring at Florida A&M University." *Integrated STEM Education Conference (ISEC), 2015 IEEE*. doi: 10.1109/ISECon.2015.7119915
In their conference talk, Clayton, Ardley, and Black discuss the way mentoring has helped recruit and retain students majoring in STEM disciplines in the Florida higher education system. In particular, the study focuses on how mentoring practices have attracted students towards STEM disciplines they were unlikely to be exposed to in high schools.

Daughtry, D., Gibson, J., & Abels, A. 2009. Mentoring Students and Professionals With Disabilities. *Professional Psychology: Research & Practice, 40*(2), 201-205. doi:10.1037/a0012400
Mentoring can have a significant positive impact on the lives of individuals. This article discusses the potential challenges and benefits faced by people with disabilities seeking to locate mentors, as well as mentoring-related issues these individuals and their mentors may face.

Evans, Jennifer. 2008. "Mentoring Magic. How to be an effective mentor: tips from two highly successful principal investigators." *The Scientist* . December 8.
In her magazine article, Evans tells the story of a post-doctoral researcher, Christine Jacob-Werner, who entered developmental biologist Lucy Shapiro's lab. Jacob-Werner says, when she was interviewed to join Shapiro's lab, she became impressed at Shapiro's personality and mentoring attitude. The article further

discusses the characteristics —such as providing fast feedback, letting some freedom to explore, etc.— that make a mentoring experience unique.

Feldman, Mitchell D., *et al.* 2012. "A mentor development program for clinical translational science faculty leads to sustained, improved confidence in mentoring skills." *Clinical and translational science* 5 (4): 362-367. doi: 10.1111/j.1752-8062.2012.00419.
In their journal article, Feldman et. al. describe a research conducted at the University of California San Francisco on the long-term effects of mentoring graduate students. The study reports the results of a survey conducted to assess some mentoring initiatives and programs carried out at UCSF. Most of the graduate students population evaluated faculties' attitudes in teaching mentoring skills in a positive way.

Fisher, C. B., Fried, A. L., & Feldman, L. G. 2009. Graduate Socialization in the Responsible Conduct of Research: A National Survey on the Research Ethics Training Experiences of Psychology Doctoral Students. *Ethics & Behavior, 19*(6), 496-518. doi:10.1080/10508420903275283
Discusses a national survey of current students and recent graduates of doctoral psychology programs completed looking at their research ethics challenges, perceptions of RCR mentoring and department climate, whether they were prepared to conduct research responsibly, and whether they believed psychology as a discipline promotes scientific integrity. Research experience, mentor RCR instruction and modeling, and department RCR policies predicted student RCR preparedness. Mentor RCR instruction, department RCR policies, and faculty modeling of RCR behaviors predicted confidence in the RCR integrity of the discipline. Implications for training are discussed.

Fisher, C. B., Fried, A. L., Goodman, S. J., & Germano, K. K. 2009. Measures of Mentoring, Department Climate, and Graduate Student Preparedness in the Responsible Conduct of Psychological Research. *Ethics & Behavior, 19* (3), 227-252. doi:10.1080/10508420902886726
Drawing from a survey of psychology graduate students, this article describes the development and psychometric evaluation of 4 Web-based student self-report scales tapping student socialization in the responsible conduct of research (RCR) with human participants. The Mentoring the Responsible Conduct of Research Scale (MRCR) is composed of 2 subscales assessing RCR instruction and modeling by research mentors. The 2 subscales of the RCR Department Climate Scale (RCR-DC) assess RCR department policies and faculty and student RCR practices. The RCR Preparedness scale (RCR-P) and the RCR Field Integrity scale (RCR-FI) measure

respectively students' confidence in their ability to conduct research responsibly and their belief in the RCR integrity of psychology as a discipline.

Forehand, R. L. 2008. The art and science of mentoring in psychology: A necessary practice to ensure our future. *American Psychologist, 63* (8), 744-755. doi:10.1037/0003-066X.63.8.744

This article initially presents an overview of the literature looking at the skillful mentoring of graduate students and borrows models from a related but more advanced field of study to stimulate the development of conceptual frameworks for guiding research on mentoring.

Gabriele, E. F., Roberts, T. J., Adams, M. S., & Steinert, B. 2012. The Formative Experience of Authorship: The Journal of Research Administration Review Process as an Exemplar System of Academic and Professional Mentoring. *Journal of Research Administration, 43*(2), 127-141.

Beginning in 2006, the leadership of the Journal of Research Administration initiated the development of system of publication review for submitting authors that is based on the general paradigm of mentorship. The mentoring experience behind the review process has been met with great success and has enhanced the publishing experience for all. While providing a viable means to ensuring responsible authorship and good publication practices, this mentoring system has emerged as uniquely formative of the academic and professional development of the profession of research administration itself and all of its allied arts and sciences.

Gray, P. W., & Jordan, S. R. 2012. Supervisors and Academic Integrity: Supervisors as Exemplars and Mentors. *Journal of Academic Ethics, 10*(4), 299-311. doi: 10.1007/s10805-012-9155-6

This article discusses the need for more research to be done on the relationship between supervisors and postgraduate students and how this relationship helps shape students' understanding of academic integrity. Unlike the undergraduate level, where student interaction with professors is often limited, postgraduate students have an ongoing relationship with their supervisors, whether at the masters or doctorate level. As part of a larger project in examining postgraduate student opinions on academic integrity and research ethics, the authors conducted surveys to investigate the relationship between student perceptions of their supervisors and student perceptions of academic integrity.

Hansman, C. A. 2009. Ethical issues in mentoring adults in higher

education. *New Directions for Adult & Continuing Education, 2009* (123), 53-63. doi:10.1002/ace.343
In this article, the author discusses some ethical issues that can arise when mentoring adult students at the undergraduate and graduate level.

Jennings, M. M., & El-adaway, I. H. 2012. Ethical Issues in Multiple-Authored and Mentor-Supervised Publications. *Journal of Professional Issues in Engineering Education & Practice, 138*(1), 37-47. doi:10.1061/(ASCE)EI.1943-5541.0000087
This paper explores the ethical issues related to publication, authorship, and mentoring with the goal of better defining co-authorship standards and encouraging research ethics discussion and education within the academic civil engineering research community. The authors propose a threefold ethical framework for evaluating and analyzing the ethical norms for authorship status.

Johnson, W. Brad and Nancy Nelson. 1999. Mentor-protégé relationships in graduate training: some ethical concerns. *Ethics & Behavior.* 9(3) 189-210.
The authors discuss the unique characteristics of a mentoring relationship as opposed to academic counseling and advising, and considers several ethical concerns related to mentoring psychology graduate students.

Johnson, W. B. 2003. A Framework for Conceptualizing Competence to Mentor. *Ethics & Behavior, 13*(2), 127-151. doi: 10.1207/S15327019EB1302_02
Universities are increasingly looking for faculty who are able to successfully mentor students, but there is currently no common approach to conceptualizing or evaluating mentor competence. This article proposes the triangular model of mentor competence as a preliminary framework for conceptualizing specific components of faculty competence in the mentor role. The triangular model includes mentor character virtues and intellectual/emotional abilities, as well as knowledge and skills (competencies) that are seen as expressions of training and experience. The article concludes with discussion of the implications of this model for faculty hiring, training, and evaluation.

Johnson, W. B. 2007. Transformational supervision: When supervisors mentor. *Professional Psychology: Research and Practice, 38* (3), 259-267. doi:10.1037/0735-7028.38.3.259
Can a psychologist simultaneously fill the roles of clinical supervisor and mentor to a trainee? What are the implications of adding a mentoring component to a supervisory relationship? Like academic advising, supervision need not incorporate a mentoring function. However, the author hypothesizes that, all things considered,

it is better for supervisees, and probably supervisors and training sites, too, when supervising psychologists engage supervisees in connected, collaborative, and increasingly reciprocal developmental relationships.

Jones, Kathryn. 2015. “Service and Mentoring: The Joy in Academics.” *The FASEB Journal* 29 (1): 354-1.

In her journal article, Jones discusses the role of mentoring in academic careers’ development. It questions how the mentoring enterprise stands, given that in most cases it is a volunteering activity and does not imply revenue streams.

Keyser, D. J., Lakoski, J. M., Lara-Cinisomo, S., Schultz, D. J., Williams, V. L., Zellers, D. F., & Pincus, H. A. 2008. Advancing institutional efforts to support research mentorship: a conceptual framework and self-assessment tool. *Academic Medicine, 83* (3), 217-225. doi:10.1097/ACM.0b13e318163700a

The purpose of this article is to assist institutions in advancing their efforts to support research mentorship. The authors provide a framework that leaders of institutions and/or departments can adapt for use as a tool to document and monitor policies for guiding the mentorship process, the programs/activities through which these policies are implemented, and the structures that are responsible for maintaining policies and implementing programs.

Kodate, N., Kodate, K., & Kodate, T. 2014. Paving the way and passing the torch: mentors’ motivation and experience of supporting women in optical engineering. *European Journal of Engineering Education, 39* (6), 648-665. doi:10.1080/03043797.2014.899323

The phenomenon of women's underrepresentation in engineering is well known. However, the slow progress in achieving better gender equality here compared with other domains has accentuated the ‘numbers’ issue, while the quality aspects have been largely ignored. This study aims look at how mentors can help attract and keep women in the field of engineering. Based on data collected from 25 mentors (8 men and 17 women from 8 countries), the paper explores their experiences of being mentors, as well as their views on recommended actions for nurturing female engineers. The findings reveal that the primary motivation for becoming a mentor was personal for men and women. Many mentors from countries with relatively lower female labour participation rates perceive their roles as guarantors of their mentees’ successful future career paths, and a similar trend can be found in mentors in academia. The study underscores the need for invigorating mentors’ roles in order to secure a more equitable future for engineering education.

Ladd, John. (1998). What's group identity got to do with it? Ethical issues in mentoring. *International Journal of Applied Philosophy.* 12 2: 239-245.
The author proposes a concept of a mentor based on the original model in Homer's "Odyssey" and argues that mentorship embodies a highly personal and bonding relationship that comes as a free gift and is based on an affinity of some sort. He further argues that morally such a relationship may be especially appropriate in a racial setting.

Ladner, D. A., Bolyard, S. C., Apul, D., & Whelton, A. J. 2013. Navigating the Academic Job Search for Environmental Engineers: Guidance for Job Seekers and Mentors. *Journal of Professional Issues in Engineering Education & Practice, 139*(3), 211-217. doi:10.1061/(ASCE)EI.1943-5541.0000148
This article reports on a workshop held to (1) to inform applicants (students and postdoctoral associates) about the academic job search process, and (2) to inform mentors about how to mentor applicants. Surveys done after the workshop found that participants felt they learned valuable information about the job search process. They found the personalized feedback on application packages to be the most helpful activity; other mentors are encouraged to provide similar personalized feedback. A wiki website component included in the workshop was effective at engaging the participants and helped broaden the impact beyond the workshop attendees.

Lederman, Doug. 2008. "Mentor, Friend – or Both?" *Inside Higher Ed.* October 28.
In the online news story, Lederman describes the characteristics required for good mentoring. A good mentoring relationship implies that the mentor be interested in both the professional and the emotional growth of the mentee.

Lee, Adrian, Carina Dennis, and Philip Campbell. 2007. "Nature's guide for mentors." *Nature* 447: 791-797. doi:10.1038/447791a
In the article, Lee, Dennis, and Campbell discuss the Nature award for creative mentoring, which has been established to promote mentoring for young researchers. Then, they describe the characteristics that make good mentoring, which include enthusiasm, appreciation for diversity, sensitivity, availability, etc.

Levine, Irene S. 2006. "Mind Matters: Getting Yourself Mentored." *Science Careers*. November 24.
The online publication tells the story of Carpenter, a graduate student who received good mentoring from a graduate student at the time when he was considering

applying. Then, she provides a list of tips on how to find a good mentor such as staying in touch, recognizing that one isn't always enough, etc.

Loue, S., & Loff, B. 2013. Mentoring International Research Ethics Trainees: Identifying Best Practices. *Journal of Empirical Research on Human Research Ethics, 8*(5), 52-58. doi:10.1525/jer.2013.8.5.52
In an effort to research the importance of mentoring for international student, this study looked at survey and interview data from 466 long-term trainees in research ethics training program. The programs most successful with mentoring involved (1) the provision of an orientation for the trainees at the commencement of training; (2) a highly structured process of mentoring that required regular meetings and task achievement timelines; (3) intensive, frequent contact with the PI; and (4) support with personal issues that were troublesome to trainees.

Lu, Gaoqing Max. 2014. "Towards world-class science and innovation system: on culture of excellence and integrity, mentoring and collaboration." *National Science Review* 1 (4): 478-480. doi: 10.1093/nsr/nwu044
In the article, Lu discusses the advancement of Chinese science. Among the causes of advancement are cooperation and mentoring at an international level.

Lukeman, Philip S. 2013. "A guide to mentoring undergraduates in the lab." *Nature nanotechnology* 784-786. doi:10.1038/nnano.2013.237
Lukeman discusses how mentoring should be performed based on the different types of audience. For instance, mentoring a graduate student requires a different attitude than mentoring an undergraduate student. Good mentoring for undergraduates involves explaining all aspects of science practice, whereas mentoring graduates requires the mentor to provide a big picture of things.

Malmgren,R. Dean, Julio M. Ottino and Luis A. Nunes Amaral. 2010. The role of mentorship in protégé performance. *Nature*. 465(7298): 622-626.
Article discusses the importance of mentoring in student performance, but the extent to which protégées mimic the mentors' career choices and acquire their own mentoring skills is unclear. This study looked at academic mathematicians and used the measure of mentorship fecundity- or number of protégées a mentor trains- to see the effect mentors have on their students' future career track.

McClelland, R. T. 2009. The Dark Side of Mentoring: Explaining Mentor-on-Mentee Aggression. *International Journal of Applied Philosophy, 23*(1), 61-86.

Recently available social scientific evidence suggests strongly that harmful aggressive behavior by mentors aimed at their mentees (mentor-on-mentee-aggression, or MOMA) is a common occurrence in such relationships. This paper seeks to characterize such aggression and to account for its persistence by means of confluence of three etiological perspectives: ethological (mentoring as a form of "alloparenting" and as a form of coalition building), broadly evolutionary (MOMA as a form of "handicap" attaching to the bonds that constitute mentoring coalitions), and psycho-dynamic (MOMA as a function of "normal narcissism"). The net result is that MOMA is an 'expectable' feature of most mentoring relationships.

Moberg, Dennis J. and Manual Velasquez. 2004. The ethics of mentoring *Business Ethics Quarterly.* 14(1): 95-122.
This paper discusses some ethical pitfalls in mentoring relationships in the area of business, and lays out the ethical responsibilities of both parties in the mentoring process.

Neal, T. 2011. How to be a good mentee. The Observer. Association for Psychological Science.
Discusses the importance of mentoring in higher education and gives some advice for students and junior faculty as to how to get the most from their formal and informal relationships.

Orland-Barak, L., Kheir-Farraj, R., & Becher, A. 2013. Mentoring in Contexts of Cultural and Political Friction: Moral Dilemmas of Mentors and Their Management in Practice. *Mentoring & Tutoring: Partnership in Learning, 21*(1), 76-95. doi:10.1080/13611267.2013.784060
This paper examines the nature of moral dilemmas mentors from three different national groups (Jewish, Druze, and Arab) encounter in their work in Israeli Arab schools, how they manage these dilemmas in practice, and how the nature of particular dilemmas might connect to their management strategies. Preparation programs for mentors need to highlight awareness of mentors' own culture and that of their mentees in order to implement a culturally and politically responsive practice.

Patton, L. 2009. "My Sister's Keeper: A Qualitative Examination of Mentoring Experiences Among African American Women in Graduate and Professional Schools." The Journal of Higher Education 80(5):510-537.
Eight African American women's mentoring experiences in relationships among African American women in graduate and professional schools are examined pertaining to lessons learned, characteristics and behaviors of African American female mentors, challenges with White mentors (male and female), and

stereotypical images of African American female mentors. The findings support mentoring as a method of empowerment and uplift. . African American women mentors were likened to "mothering", students sought alternative mentoring relationships beyond academia, and trust was a major concern with White mentors.

Pisimisi, S. S. and M.G. Joannides. 2005. Developing mentoring relationships to support the careers of women in electrical engineering and computer technologies: An analysis on mentors' competencies. *European Journal of Engineering Education.* 60(4) 477-486. doi: 10.1080/03043790500213193

As part of a European project looking at how motivate and support young women towards future educational paths and careers in electrical engineering and computer technologies, the authors surveyed twenty-six universities on their views of what makes a good mentor and mentoring program. The paper discusses the important elements of mentoring schemes addressed to women deciding engineering education and career and analyses the proper mentor's competencies. The study reveals that mentors should have a wide range of qualifications apart from their technical background, such as good professional level and training experience, as well as willingness, communication skills and other individual characteristics related to their personality.

Pimple, Kenneth 2001. "The Moral Climate of Research in the United States Today."

An online literature review, it provides a background for the Institute of Medicine Committee on Assessing Integrity in Research Environments. It focuses the moral climate of research in the United States as of 2001, and it addresses the factors that contribute to unethical research practices.

Poling, Kirsten 2015. "MySci Advisors: Establishing a Peer-Mentoring Program for First Year Science Student Support." *Collected Essays on Learning and Teaching* 181-190.

The article describes the program established at the University of Windsor to improve peer mentoring among first-year students. The program is called MySci Advisors and aims at providing a model for other schools to follow.

Puljak, Livia 2006. "Career Blocker: Bad Advisors." *Science*. January 13.

Puljak describes bad mentoring behaviors, which can ultimately affect the professional development of a young scientist. Such behaviors include mentors not understanding diversity, not providing decent research funding, or even humiliating graduate students and post-docs.

Ramirez, J. J. 2012. The Intentional Mentor: Effective Mentorship of Undergraduate Science Students. *Journal of Undergraduate Neuroscience Education, 11*(1), A55-A63.
Successfully mentoring undergraduate science students requires a myriad of skills that can be honed with forethought and practice. In this essay, the value of mentoring, the developmental profile of young adult students, and the traits of a good mentor are explored. The Triangular Model proposed by W. Brad Johnson provides a theoretical framework for the development of effective mentorship. Fifteen tips gleaned from the literature and the author's personal experience are provided to help improve mentoring skills of faculty working with undergraduate science students.

Redden, Molly. 2011. "Online-Mentor Program Raises Retention of At-Risk Science Students." *The Chronicle of Higher Education*. September 11.
The article describes the goals of MentorNet, a program that puts science students in contact with private companies to establish professional relationships. Those companies include AT&T, IBM, etc.

Ripley, E., Markowitz, M., & Nichols-Casebolt, A. 2012. Guiding the Next Generation of NIH Investigators in Responsible Conduct of Research: The Role of the Mentor. *Accountability in Research: Policies and Quality Assurance, 19*(4), 209-219. doi: 10.1080/08989621.2012.700880.
In this study, National Institutes of Health (NIH) K award recipients and their mentors were surveyed to investigate the role of the mentor. The authors found that a majority of mentors provided guidance in responsible research conduct (RCR), and that most of these relationships were deemed helpful. Mentors also responded that they played a greater importance in RCR training of their mentees than the mentees reported. The results suggest both mentors and mentees report that mentors ideally should play a more important role in RCR training than was actually the case. For conflicting interests, subjects' protection, and misconduct, approximately 50% of K recipients found the mentor to be not at all important or only somewhat important for these areas of RCR training. The authors conclude the mentor's role is important but not optimal based on the results of our study cohort.

Schlosser, L. Z., & Foley, P. F. 2008. Ethical issues in multicultural student-faculty mentoring relationships in higher education. *Mentoring & Tutoring: Partnership in Learning, 16*(1), 63-75. doi:10.1080/13611260701801015
This article explores the ethical issues pertaining to student-faculty mentoring relationships in graduate training programs, with a specific focus on understanding

these concerns within a multicultural context. Specific ethical codes are cited in which quandaries may arise vis-à-vis cultural factors in student-faculty mentorships, and examples are provided related to the aforementioned aspects of multiculturalism.

Storrs, D., L. Putsche and A. Taylor. 2008. Mentoring Expectations and Realities: An Analysis of Metaphorical Thinking Among Female Undergraduate Protégés and their Mentors in a University Mentoring Programme *Mentoring & Tutoring: Partnerships in Learning.* 16(2): 175-187.
This article describes the differences between mentors' and protégés' expectations and realities regarding mentoring relationships and goals.

Sutkowski, Owen. 2011. "Kitchen cabinet of mentors." *Inside Higher Education*. July 6.
In the online story, Sutkowski discusses the benefit of having a variety of types of mentoring –what he calls a kitchen cabinet of mentors. The argument is that one gets better advice if he/she gets advice from people with different backgrounds and at different stages of their careers.

Titus, S. L., & Ballou, J. M. 2013. Faculty Members' Perceptions of Advising versus Mentoring: Does the Name Matter? *Science and Engineering Ethics, 19*(3), 1267-1281. doi: 10.1007/s11948-012-9366-7
This study explores the views of 3,500 scientists who have primary responsibilities to educate PhD and MD/PhD students. Faculty members report they are more likely to prefer being viewed as advisors (54%) than mentors (38%). Through an examination of perceptions about specific responsibilities of advisors and mentors, faculty members provide a description of their culture and the expectations they have about themselves and others. One would expect that because mentoring requires additional time and involvement that faculty would report differences between advising and mentoring. However, faculty members perceive few differences between advisors and mentors. The authors conclude that we as a scientific community need to help advisors to develop the skills necessary to be good advisors so, that they more closely resemble those of mentors.

Weaver, G. R., TreviÑO, L. K., & Agle, B. 2005. "Somebody I Look Up To:" Ethical Role Models in Organizations. *Organizational Dynamics, 34* (4), 313-330. doi:10.1016/j.orgdyn.2005.08.001
Through in-depth interviews, the authors asked experienced managers to explain what led them to single someone out as a role model for ethical behavior at work. These managers pointed to four general categories of attitudes and behaviors that

characterized their ethical role models: everyday interpersonal behaviors (e.g., taking responsibility for others), high ethical expectations for oneself (e.g., sacrificing self-interest to do what is right), high ethical expectations for others (e.g., holding others ethically accountable), and fairness in dealing with others (e.g., soliciting input from others). These observations have important implications for fostering ethics in organizations, and the responsibility of all managers- not just high level executives- to model ethical behavior.

Weil, Vivian. 2001. Mentoring: Some Ethical Considerations. *Science and Engineering Ethics*. 7 (4): *471-482.*
The author argues for an "honorific" definition of mentoring, according to which a mentor is virtuous like a saint or hero. She then differentiates between what is meant by an advisor and a mentor. Namely, the role of advisor can be specified, mandated, and monitored, whereas mentoring must be a voluntary activity.

Whitbeck, Caroline. 2001. "Group mentoring to foster the responsible conduct of research." *Science and Engineering Ethics* 7: 541-558. doi:10.1007/s11948-001-0012-z
In her article, Whitbeck discusses the results of research conducted on mentoring as a holistic behavior. In particular, she looks at mentoring as a relationship in which both the mentor and the mentee play a crucial and inter-dependent role in improving the quality of research.

Wilson, Zakiya S., *et al.* 2012. "Hierarchical mentoring: A transformative strategy for improving diversity and retention in undergraduate STEM disciplines." *Journal of Science Education and Technology* 21: 148-156. doi:10.1007/s10956-011-9292-5
Wilson et. al. discuss different strategies used in the US to help students in STEM disciplines, and in particular students from underrepresented groups, succeed and graduate. In this objective, mentoring plays a fundamental role.

Wright, D., L. Titus and J.B. Cornelison. 2008. Mentoring and research misconduct: An analysis of research mentoring in closed ORI cases. *Science and Engineering Ethics*. 14(3) 323-336.
The authors looked at research misconduct cases submitted to the U.S. Office of Research Integrity to explore the role of the mentor in the cases of trainee research misconduct. They focused on three behaviors they believed mentors should focus on with their trainees, namely to review source data, to teach them about research standards, and to minimize stressful work situations. The authors found that about three fourths of the mentors had not reviewed source data and two-thirds had not set standards. Though there was little evidence of the mentors causing stress,

about half of the convicted trainees seemed to be in overly stressful work situations,

Zerzan, J. T., Hess, R., Schur, E., Phillips, R. S., & Rigotti, N. 2009. Making the most of mentors: a guide for mentees. *Academic Medicine, 84* (1), 140-144. doi:10.1097/ACM.0b013e3181906e8f
The authors apply "managing up," a corporate concept, to academic medical settings both to promote effective, successful mentoring and to make a mentor's job easier. Managing up requires the mentee to take responsibility for his or her part in the collaborative alliance and to be the leader of the relationship by guiding and facilitating the mentor's efforts to create a satisfying and productive relationship for both parties. The authors review the initiation and cultivation of a mentoring relationship from the perspective of a mentee at any stage (student through junior faculty), and they propose specific strategies for mentee success.

Fisher, Celia B. Frederick J. Wertz and Sabrina J. Goodman. "Graduate Training in Responsible Conduct of Social Science Research: The Role of Mentors and Departmental Climate." In Donna M Mertens & Paulina E. Ginsberg (Eds.) The Handbook of Social Research Ethics pp. 550-564.
Discusses the role of mentors in social science, and strategies that social science departments can use to build a strong mentoring program.

See also the 2001 special issue of Science and Engineering Ethics focusing on mentoring.

Notes

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