Mentoring Up for Postdoctoral Trainees

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Foreword

My wife and I recently purchased a house, and have been reflecting on the concept of hospitality. We want our house to be hospitable so that guests will feel welcomed and enjoy our place. Being hospitable means thoughtfully considering many aspects: physical space, visual aesthetics, social interactions, appetizing refreshments, and so on. I've also been reflecting on how organizations—such as universities and academic disciplines—can be hospitable. They not only need to invite guests to visit, but also welcome and prepare some to become active members in and even co-owners of the organization, especially if the organization intends to expand, requiring a steady stream of guests, members, and co-owners.

Guests can enjoy refreshments and even stay over multiple days, while owners have the freedom and responsibility to decide how to use its spaces and other resources, who to invite, and why it should exist. Since universities and academic disciplines are large organizations and intend to expand and excel, they need to welcome guests and to consider how they can enfold some to become active members and co-owners. As universities and academic disciplines have become more diverse on multiple dimensions, these organizations need to determine how to broaden participation, create inclusive communities, and establish equitable systems for advancing in the organization. This critical need to promote inclusion and equity is critical in particular if the organization wants to excel. Excellence for organizations requires that all members (especially those who have been historically marginalized) are able to fully engage and to advance into co-owner or leadership roles. This need for organizations to address the increasing diversity of their members was the context from which the concept of "mentoring up" was conceived.

When I was working under Rick McGee at Northwestern University to help train early PhD students in an NIH-funded diversity program, I was preparing professional development workshops and ran across Gabarro and Kotter's paper on "managing up". We considered how this concept could be transplanted from management in the business sector into mentoring relationships in academia. As we discussed this topic, Rick connected me to Chris Pfund, who introduced us to Janet Branchaw. They have worked in this area with much more experience and depth than myself, and so it was incredibly exciting and honoring to work with them. We collaborated to write a book chapter in *The Mentoring Continuum*, and then were invited to contribute another chapter for the National Postdoctoral Association's *Advancing Postdoc Women Guidebook*. Others in the National Research Mentoring Network have taken the concept of "mentoring up" further, and I've been incredibly humbled, honored, and thrilled. For example, Bruce Birren has advanced and added to the concept, and it's always a pleasure to design and deliver trainings with him.

I am thrilled and excited that Pam Asquith and Fátima Sancheznieto have integrated the concept of "mentoring up" and adapted existing curricula to help train postdocs to advance professionally. Because postdocs work in this ambiguous space of having achieved a doctoral degree, and yet are often in early stages of their career, training materials such as this are incredibly important to equip and encourage postdocs to proactively engage with their faculty mentors. As early trainees, postdocs are also generally more vulnerable and have less voice to express their ideas. *Mentoring Up for Post-Doctoral Trainees* is full of useful activities and resources that are strategically designed to help postdocs establish their voice, enhance their relationships with their faculty mentors, and launch them into future careers. This is an invaluable resource. As universities and academic disciplines use these materials, they will become more hospitable: inviting postdocs to be trained so they can advance into co-owners and leaders of their departments and fields. As postdocs advance, they can in turn create hospitable spaces for their mentees. I am excited and eagerly anticipate the benefits that organizations and postdocs will receive from using this vital curriculum.

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Acknowledgements

This curriculum was adapted from *Mentee Training for Postdocs and Junior Faculty in Clinical and Translational Research* (Pfund, Christine, 2016) with support from the Department of Obstetrics & Gynecology at the University of Wisconsin-Madison. Adaptation, development and support for specific components of the curriculum are noted in the footer of each session. The curriculum is based on the format of the *Entering Mentoring* series. The session on *Promoting Mentee Research-Self Efficacy* was adapted by Amanda Butz and Christine Pfund from mentor training curriculum developed by Byars-Winston, Angela, Leveritt, Patrice, Branchaw, Janet, and Pfund, Christine (2013) . University of Wisconsin-Madison. Supported by NIH grant # R01 GM094573 (Byars-Winston, PI) Version 2 (November 2015) . Thank you to all the individuals who have developed and contributed to the research and training materials referenced throughout. A special thanks to Stephanie House and Drs. Christine Pfund and Beronda Montgomery for their critical review and feedback.

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Curriculum Overview

Content, Format, Implementation, and Assessment

Content

Mentoring is collaborative. Ideally, mentees and mentors engage as partners through reciprocal activities such as planning, acting, reflecting, questioning, and problem-solving. Successful mentoring relationships are those in which mentees reach the individual milestones that allow them to progress to the next stage along the trajectory for a sustainable career. Mentee success is defined as mentees having gained 1) personal and professional competencies necessary to define their research goals, 2) experience for that career, and 3) the ability and opportunity to progress toward that chosen career goal.

The content of each session in this curriculum is designed to address some of the challenges and concerns that mentees might encounter throughout their career. In this mentoring up series, mentees will develop the knowledge and skills to proactively and effectively address these challenges and navigate their mentoring relationships and career progression. Topics addressed include:

- Maintaining Effective Communication
- Aligning Expectations
- Addressing Equity and Inclusion
- Building Research Self-Efficacy
- Achieving Independence
- Seeking Professional Development

Each of these topics is critical for mentee success: although these divisions are, at some level, artificial and overlapping, focusing on one topic in each session allows mentees to delve more deeply into each. Session leaders who use these training materials are encouraged to read through all of the materials ahead of time so they can highlight linkages between topics throughout the training.

Audience

This curriculum was adapted for those who wish to implement mentoring up programs for postdocs in academic research. While the individual activities included in the curriculum may focus on a specific type of research or a specific aspect of a mentoring relationship, the curriculum as a whole is designed to include activities relevant to a broad range of mentees across diverse areas of research and varied stages of their mentoring relationships. These curricular materials, as well as others that target mentees at other stages of their training and their respective mentors, are available at https://www.CIMERproject.org

Format

The structure of this research mentee training program is based on the experience of faculty and staff who implemented *Entering Research* and *Entering Mentoring* curricula at the University of Wisconsin-Madison. These facilitators have learned that the best results come from keeping an open discussion format to allow for participants' diverse experiences to be integrated into the training. Simply asking the mentee few guiding questions typically leads to vigorous discussion. The case studies and reading materials can provide a tangible starting point, and the mentees often move quickly from the hypothetical examples to their own research experiences. In fact, facilitators are encouraged to use the situations expressed by participants in place of the provided case studies, when appropriate. The training is most effective with mentees who are presented with

opportunities to implement ideas generated by the discussions. You may want to encourage participants to reflect on any changes they have made in the relationships with their mentors at the start of each training session.

Implementation: Facilitating Research Mentee Training

Facilitating research mentee training is not the same as teaching it. Your role as facilitator is to enable participants to take ownership of their own learning by helping them engage in self-reflection and shared discovery to maximize learning. Your role in the group is to build a community of mentees learning together toward the common goal of becoming more effective in navigating the academic research landscape. Your role in the group is to help others to work through their thoughts and ideas; it is not your role to be an expert. As a facilitator, you may also walk a fine line between facilitator and participant—but remember that group members will look to you for guidance and structure. Your own experiences and ideas should enhance the discussion, but not dominate and become the primary focus of the discussion.

Being an effective facilitator is the key to helping the research trainees meet the learning objectives and become more successful researchers. To assist you in, and strengthen your own facilitation abilities, we have included a brief facilitator guide in the next section that contains additional information, tips, and tools for facilitation.

Implementation: Using this Guidebook to Facilitate Mentee Training

This guidebook contains facilitator instructions and materials for each of the sessions outlined in the sample syllabus. Each session is organized as follows:

1. Facilitator Notes
    a. Introduction and Learning Objectives
    b. Strategies for Mentoring Up
    c. Recommended session length, handouts and materials needed, activity formats
2. Participant Materials:
    a. Activities, case studies, handouts, and readings

Facilitators should prepare for each session by copying the learning objectives, case studies, worksheets, mentoring tools, and readings for each mentee in the group. Alternatively, all the materials can be copied at the start of the sessions and distributed at the first meeting or posted on a website. The specific themes and objectives for each session are included at the beginning of the materials. Facilitators might consider asking participants to review the themes and learning objectives at the beginning of each session, or to review them after a few weeks to check their progress.

Guiding discussion questions and notes for facilitators are also included in each session plan. Time estimates for activities and facilitated discussions for each session are indicated in parentheses and can be adjusted at the facilitator's discretion. The facilitator notes provide directive signposts to support the facilitation process as described below:

ACTIVITY	Participants are to engage in some process on their own, in small groups, or as a large group.
TELL	Information that follows needs to be shared with the whole group.
ASK	A specific question needs to be put to the group.
NOTE	Some particular issue or content needs to be emphasized.
DISCUSS	A broader discussion, usually supported by guiding questions, needs to occur. Sometimes more discussion questions are provided than can reasonably be addressed in the time allotted for the activity or group discussion, but the questions suggested for the case studies in this training are based on the experiences of facilitators.

The following training outline is an example of how the sessions might be structured as five sessions lasting one to two hours. Topics have been paired and organized based on their connection and relevance to each other. While the spacing between these sessions is flexible, former participants found separating them by 1-2 weeks to be effective as it allows time for reflection and practice.

2-Hour Sessions	Topics
Session 1	Introduction to Mentoring Up (*45 minutes)* Maintaining Effective Communication (*65 minutes*)
Session 2	Aligning Expectations (*80 minutes*)
Session 3	Addressing Equity and Inclusion (*75 minutes*)
Session 4	Building Research Self-Efficacy (*60 minutes*)
Session 5	Achieving Independence (*35 minutes*) Seeking Professional Development (*70 minutes*)

Facilitators may want to consider alternate session pairing and length, such as two four to five hour sessions.

Assessment of Mentoring Up Training:
Following the Mentoring Up sessions, you might consider asking participants to complete a survey based on their experience. The survey that has been developed for this purpose can be used to collect feedback on the training sessions themselves, on your skills as a facilitator, and to assess the knowledge and skill gains of your participants upon completion of the training. We recommend using our survey tools, which can be found at https://CIMERproject.org

Curriculum Outline: Competencies and Learning Objectives

Introduction to Mentoring Up

Mentees will have the knowledge and skills to:

1. Learn about other mentees in the group to begin building a learning community.
2. Define mentoring relationships and their role as a mentor/mentee.
3. Prepare to effectively reframe the relationships with their research mentors and "mentor up".

Maintaining Effective Communication

Mentees will have the knowledge and skills to:

1. Communicate effectively across diverse dimensions including varied backgrounds, disciplines, ethnicities, positions of power, etc.
2. Accept and use constructive feedback.
3. Identify different communication styles/ approaches.
4. Use multiple strategies for improving communication (in person, at a distance, across multiple mentors, and within proper personal boundaries).

Aligning Expectations

Mentees will have the knowledge and skills to:

1. Effectively establish mutually beneficial expectations for the mentoring relationship.
2. Clearly communicate expectations for the mentoring relationship.
3. Align mentee and mentor expectations.

Addressing Equity and Inclusion

Mentees will have the knowledge and skills to:

1. Improve and expand understanding of equity and inclusion, and how diversity influences mentor-mentee interactions.
2. Recognize the impact that conscious and unconscious assumptions, preconceptions, biases, and prejudices bring to the mentor-mentee relationship and how to manage them.

Building Research Self-Efficacy

Mentees will have the knowledge and skills to:

1. Identify signs of self-efficacy that resonate when conducting research related tasks
2. Define self-efficacy and its four sources
3. Articulate their role in building their own research self-efficacy
4. Assess the influence of others on their research self-efficacy
5. Devise strategies to support others' research self-efficacy

Achieving Independence

Mentees will have the knowledge and skills to:

1. Define independence, its core elements, and how those elements change over the course of a mentoring relationship
2. Identify the benefits and challenges of fostering independence, including the sometimes conflicting goals of fostering independence and achieving grant-funded research objectives.

Seeking Professional Development

Mentees will have the knowledge and skills to:

1. Identify the roles mentors play in their overall professional development
2. Develop or revise their individual development plan IDP
3. Recognize and engage in open dialogue on balancing the competing demands, needs, and interests of mentors and mentees, e.g., research productivity, grant funding, creativity and independence, career preference decisions, non-research activities, personal development, work-family balance, etc.

Introduction to Facilitation

Role of Facilitators

The following materials were designed to assist you in your role as group facilitator of the research mentee training curriculum. Specifically, these materials will help you guide the trainees as they work through their thoughts and ideas and engage in self-reflection and shared discovery. *Importantly, your role is not to teach others, but rather to guide them in learning how to be a mentor.* As a facilitator, your role is to:

- **Make it safe -** Take time to tell the group members that the training sessions are a safe place to be honest about their ideas and feelings. Everyone's ideas are worth hearing. Reinforce the expectation of confidentiality; what is shared within the group should stay within the group.

- **Keep it constructive and positive -** Remind members of your group to keep things positive and constructive. Ask the group how they want to deal with negativity and venting. Remind them that the training is about working together to learn and help discuss useful solutions to common barriers and obstacles, not to merely complain about the current situation or to discount the ideas of others in the interest of a personal agenda.

- **Make the discussion functional -** At the start of each session, explain the goals of the session to the group. Try to keep the group on task without rushing them. If the conversation begins to move beyond the main topic, bring the discussion back to the main theme of the session.

- **Give members of the group functional roles and responsibilities -** Assign or ask for volunteers to take notes, keep track of time, and report to the entire group at the end of the session. Functional roles help keep participants engaged.

- **Give all participants a voice -** In a group, there are likely to be issues of intimidation and power dynamics that can play out in ways that allow certain members of the group to dominate while others remain silent. At the start of the conversation, mention that the group is mixed by design, and point out that a diversity of perspectives is an essential part of the process. Remind group members to respect all levels of experience. It's important that everyone's voice is heard.

General Notes on Facilitating a Group

Each group will take on its feel and personality based on the people in the group, the facilitator's approach, and a host of external factors beyond your control. It helps if you adopt a no-fault clause stating that if a group is not working well, it is through no fault of a single individual, but rather a combination of circumstances. It's hard to not take it personally if a group doesn't function well, but remember, you are just one part of the whole dynamic.

It also helps if you are able to release your expectations for how a meeting or group should go, and instead focus on core aspects of the process. Your role as a facilitator is to be intentional and explicit, while remaining flexible and not overly prescriptive. You can only do so much as a facilitator - to a large extent, it is up to the participants to take ownership of their own learning, especially since this training is designed for adults who either already have advanced degrees, or are in the process of obtaining them. Individual ownership, self-reflection, and shared discovery and learning will promote the deepest learning for this type of program.

As challenging but normal group dynamics surface, the group will look to you to fix problems. But part of your role is to help others see that they too are also responsible for addressing problems. You can help them realize this by holding on tightly to the following core ideas of group dynamics (and periodically reminding participants of them):

- ➢ Respectful interactions (listening, non-judging, non-dominating, genuine questioning, etc.) are essential.
- ➢ Relevant tangents that tie back to a central topic, issue, or question are fine, but don't let them derail the central purpose of the discussion.
- ➢ You need to keep moving ahead, but there is no need to push the schedule if the group needs time to reflect or slow down. If you slow down or skip something, you can anticipate participants will feel they are behind or missing out, so reassure them that the initial schedule is only a guide and there will be time to revisit topics if needed.
- ➢ If you try something and it doesn't go well, don't abandon it right away. Step back and think about what went wrong, talk to the group, learning from it, and try it again. It often takes a time or two to get the group warmed up to something new.
- ➢ Discomfort and silence are ok, but with a clearly stated context and purpose. Silence may seem like a waste of time in meetings, but it gives people a chance to think, digest, and reflect. Allow for a few silent breaks before, during, and at the end of each meeting.
- ➢ Make it easy, rewarding, and fun for people to participate, and encourage others to do the same for each other. Simple things like friendly reminders of meetings, providing coffee, tea, or snacks, and follow-up calls to check in with someone if they miss a meeting, all send the message that you care and want to make it easy for group members to participate.

Adapted from the *Creating a Collaborative Learning Environment Guidebook,* Center for the Integration of Research, Teaching, and Learning:
http://www.cirtl.net/files/Guidebook_CreatingACollaborativeLearningEnvironment.pdf

Group Dynamics: Suggestions for How to Handle Challenges

What do I do when no one talks?

- ➢ Have everyone write an idea or answer to a question on a piece of paper and toss it in the middle of the table. Each participant then draws a piece of paper (excluding their own) from the center of the table and reads it out loud. All ideas are read out loud before any open discussion begins.

- ➢ Have participants discuss a topic in pairs for three to five minutes before reconvening as an entire group.

- ➢ Ask the group: "This topic seems challenging for us...why do you think that is?"

What do I do when one person is dominating the conversation?

- ➢ Use a talking stone to guide the discussion. Participants may only talk when holding the stone. Each person in the group is given a chance to speak before anyone else can have a second turn with the stone. Participants may pass if they choose not to talk. Importantly, each person holding the stone should share their own ideas and resist responding to someone else's ideas. Generally, once everyone has a chance to speak, the group can move into open discussion without the stone.

- ➢ Use the Constructive/Destructive Group Behaviors Exercise. Each participant chooses their most constructive and destructive group behavior from a list (see following section). Each person writes the two behaviors on the back of their table tent. Then, participants share their choice with the group and explain why they selected those behaviors. This exercise also helps provide the group with a vocabulary so they may name these behaviors as they later note them in themselves and others. It provides a light hearted and nonthreatening way that they can help each other stay on track.

- ➢ Acknowledge the contributions of the person dominating the conversation but then say that you would like to hear another's view or thoughts before moving on. Try to be comfortable with silence until another person speaks up.

What do I do when the group members direct all their questions and comments to me, instead of their fellow group members?

- ➢ Each time a group member talks to you, move your eye contact to someone else in the group to help the speaker direct his/her attention elsewhere.

- ➢ Ask the participants for help in resolving one of your own challenges. For example, ask them for advice on how to deal with an apathetic peer mentor. This helps the group members stop looking to you for the right answers and redirects the problem-solving and discussion focus to the entire group.

What do I do when a certain person never talks?

- ➢ Have a different participant initiate each day's discussion so that different people have the chance to speak first.

- ➢ Assign participants in the group different roles in a scenario or case study and ask them to consider the case from a certain perspective. Ask the participants to discuss the case in the entire group from the various perspectives. For example, some participants could consider the perspective of the mentee, while others consider the perspective of the mentor.

- ➢ Try smaller group discussions (two to three participants per group) as individuals may feel more comfortable talking in smaller groups or without certain other individuals present.

- ➢ Outside of the session, speak with the person about what you are observing and inquire about whether you can assist in making participation easier.

What do I do when the group gets off topic?

- ➢ Have everyone write the ideas they want to share on a given topic for three minutes. This short writing time will help participants collect their ideas and decide what thoughts they would most like to share with the group so they can focus on that point.

- ➢ Ask someone to take notes and recap the discussion at the half-way and end points of the session to keep the conversation focused. Remind participants of the day's topic or a question that was asked.

Adapted from Branchaw, J., Pfund, C., and Rediske, R. (2010) *Entering Research: A Facilitator's Manual Workshops for Students Beginning Research in Science.* WH Freeman and Company: New York, NY

Constructive and Destructive Group Behaviors

Choose your single most constructive group behavior and your single most destructive group behavior from the list below. Share your choices with the members of your group so they may draw on your constructive behavior and minimize your destructive behavior as you work together.

Constructive Group Behaviors

Cooperating: Is interested in the views and perspectives of other group members and willing to adapt for the good of the group.

Clarifying: Makes issues clear for the group by listening, summarizing, and focusing discussions.

Inspiring: Enlivens the group, encourages participation and progress.

Harmonizing: Encourages group cohesion and collaboration. For example, uses humor as relief after a particularly difficult discussion.

Risk Taking: Is willing to risk possible personal loss or embarrassment for success of the overall group or project.

Process Checking: Questions the group on process issues such as agenda, time frames, discussion topics, decision methods, use of information, etc.

Destructive Group Behaviors

Dominating: Uses most of the meeting time to express personal views and opinions. Tries to take control by use of power, time, etc.

Rushing: Encourages the group to move on before task is complete. Gets tired of listening to others and working with the group.

Withdrawing: Removes self from discussions or decision making. Refuses to participate.

Discounting: Disregards or minimizes group or individual ideas or suggestions. Severe discounting behavior includes insults, which are often in the form of jokes.

Digressing: Rambles, tells stories, and takes group away from primary purpose.

Blocking: Impedes group progress by obstructing all ideas and suggestions: “That will never work because…”

Adapted from Brunt. 1993. Facilitation Skills for Quality Improvement. *Quality Enhancement Strategies*. 1008 Fish Hatchery Road. Madison WI 53715

Introduction to Mentoring Up

Introduction

Establishing group dynamics and laying the ground rules are perhaps two of the most important steps to launch a successful mentoring up training program. Once established, these guidelines help ensure mentees engage in shared learning of ways to become more effective mentees.

Learning Objectives

Mentees will have the knowledge and skills to:

1. Learn about other mentees in the group to begin building a learning community.
2. Define mentoring relationships and their role as a mentor/mentee.
3. Prepare to effectively reframe the relationships with their research mentors and “mentor up”.

Facilitator Notes

Recommended Session Length for Introduction to Mentor Training (45 min)

Handouts/Materials for Session

- Pictures (can be obtained from packets of postcards, pages from a magazine, or printed images from websites)
- Post-it-notes
- Mentoring Up Strategies Worksheet
- SMART Goals Worksheet

Objective 1: Learn about other mentees in the group to begin building a learning community. (15 min)

ACTIVITY #1: Introductory Activity

Spread thirty or more pictures* that broadly depict phenomena related to teaching, mentoring, etc. around the room. Participants choose a visual representation in response to a question or statement, such as "Choose a picture that best represents mentoring." Each participant introduces themselves (name, career stage/program, something about themselves not found on their CV) and explains their choice of picture.

*Adapted from *Paulus, C.J., Horth, D.M., and Drath, W.H. (1999) Visual Explorer: a tool for making shared sense of complexity. Center for Creative Leadership Press.* http://www.ccl.org/leadership/index.aspx. Pictures can be obtained from packets of postcards, pages from a magazine, or printed images from websites.

Objective 2: Define mentoring relationships and their role as a mentor/mentee. (10 min)

TELL: A mentoring relationship is a collaborative learning relationship that proceeds through purposeful stages over time and has the primary goal of helping mentees acquire the essential competencies needed for success in their chosen career. It requires personal and intellectual growth and development. (3 min)

Effective Mentoring has been linked to enhanced self-efficacy, desire to pursue a PhD or MD/PHD, persistence; research productivity, higher career satisfaction, and enhanced recruitment of underrepresented minorities into biomedical research related career pathways. At this stage in your career, some of you are both a mentor and a mentee.

DISCUSS: Think about either your current or a previous research mentoring relationship. What are some of the aspects of your relationship that have been most beneficial to you? (5 min)

TELL: There are many attributes of effective mentoring relationships. Over the next few sessions we are going to cover a couple of these attributes, including effective communication, aligning expectations between a mentor and a mentee, acknowledging the role of equity and inclusion, building your own research self-efficacy, achieving independence as a researcher, and seeking professional development. (2 min)

Objective 3: Prepare to effectively reframe the relationships with their research mentors and "mentor up". (20 min)

FACILITATOR NOTE: The concept of mentoring up will be reinforced during each session of the curriculum. Strategies for mentoring up as relevant to each competency are included after the learning objectives for each

session. “Mentoring Up” is taken from the concept of “Managing up” from the business world (Gabarro, John J., and John P. Kotter. "Managing Your Boss." *Harvard Business Review* 1980, 2005) and refers to the active role that mentees have in shaping the mentoring relationship. Mentoring up is the mentee learning to proactively manage their mentoring relationship. Being proactive is much more than just taking the initiative - it's about accepting responsibility for your own behaviors (past, present and future). Being a proactive mentee includes being respectful of your mentor's time and making the most of it. Mentoring up is “the mentee’s proactive engagement in the mentor-mentee relationship, so that both parties mutually benefit from the relationship and move forwards towards an agreed-upon purpose or vision.” (Lee, S., McGee, R., Pfund,C., and Branchaw, J. 2015. “Mentoring Up: Learning to Manage Your Mentoring Relationships” In: The Mentoring Continuum: From Graduate School Through Tenure. Glenn Wright, ed. Syracuse, NY: The Graduate School Press of Syracuse University. pp. 133-153).

TELL: As a mentee, you have something to contribute to the mentoring relationship. Mentees and mentors need to communicate their mutual needs to clarify the role of the mentoring relationship. The idea of “Mentoring up” is taken from the concept of “Managing up” from the business world. Mentoring up is the mentee learning to proactively manage their mentoring relationship. Being proactive is much more than just taking the initiative - it's about accepting responsibility for your own behaviors (past, present and future). Share the following examples of mentees engaging in mentoring up. (5 min)

Mentees are ‘mentoring up’ when they…	
1.	Think and assess what they are seeking from their mentors.
2.	Shift from thinking about good and bad mentors to the core attributes of effective mentoring relationships.
3.	Recognize that effective mentoring is not just about mentors guiding mentees, but also about mentees guiding mentors – *mentoring up.*
4.	Learn more about recent theoretical practical and research advances to guide development of effective mentoring skills.
5.	Become familiar with key resources to continue building their skills as mentees (and mentors).

ACTIVITY #2: (15 min)
Distribute post-it-notes to participants.
TELL: Take a minute to think about one important research or career goal you want to achieve this academic year. Then list up to 3 things (write down on a post-it note) that you need from your mentors to support the accomplishment of this goal. When done, post your notes up on the whiteboard or wall.
As a large group, look across the lists noting any commonalities. (10 min)

ASK: Any thoughts about what you can do to be a proactive mentee and communicate what you need? (5 min)

Suggestions to add to discussion as applicable:

- Act with confidence
- Seek to understand your mentor’s expectations
- Communicate your goals and expectations
- Actively listen
- Determine and fulfill your responsibilities as a mentee

Discussion points the mentee can initiate:

- Ask mentor to show you her/his work site. Ask to sit in on a meeting.
- Describe your search for an internship, job or promotion and ask for feedback.
- Ask mentor to look at your résumé and/or cover letter.

- Ask mentor to describe her/his work and a big project that she/he is proud of.
- Ask mentor to look at your LinkedIn profile and make suggestions.
- Ask mentor to listen to a practice presentation and give feedback on slides.
- If you are a student, describe your coursework and ask advice about electives to take.
- List your short-term and long-term career goals, and goals for relationship with mentor and discuss them.

Suggestions to share from the National Postdoctoral Association if not already mentioned:

- Meet regularly with mentors and go prepared with specific goals in mind.
- It's okay to ask for help or feedback.
- Openly accept feedback and demonstrate willingness to grow.
- Follow through on commitments.
- Be a problem solver.

FACILITATOR NOTE: The handout section of this module includes two handouts, the Mentoring Up Strategies Worksheet and the SMART Goals for your Mentoring Relationship, both of which can be distributed and introduced during this session as additional tools for use by trainees as they progress through the Mentoring Up curriculum.

References:

Lee, S., McGee, R., Pfund,C., and Branchaw, J. 2015. "Mentoring Up: Learning to Manage Your Mentoring Relationships" In: The Mentoring Continuum: From Graduate School Through Tenure. Glenn Wright, ed. Syracuse, NY: The Graduate School Press of Syracuse University. pp. 133-153.

McGee, R., Lee, S., Pfund, C., Branchaw, J. 2015. Beyond "Finding Good Mentors" to "Building and Cultivating your Mentoring Team." National Postdoctoral Association: Advancing Postdoc Women Guidebook

Dean, D.J. 2009. Getting the most out of your mentoring relationships: A handbook for women in STEM. Springer.

Participant Materials

Handout

Mentoring Up Strategies Worksheet

Throughout this curriculum, trainees will have the opportunity to discuss Mentoring Up strategies as they relate to the different module topics. In addition to the tables with strategies found in each chapter, we provide below an empty table to be used as a tool by trainees as they go through the curriculum. Any additional mentoring up strategies discussed can be noted below.

Module	Mentees are 'mentoring up' when they…
Intro to Mentee Training (General Strategies)	
Maintaining Effective Communication	
Aligning Expectations	
Addressing Equity and Inclusion	
Building Research Self-Efficacy	
Achieving Independence	
Seeking Professional Development	

Handout

Developing SMART Goals for your Mentoring Relationship

As you work through each module and think on your current mentoring relationships, carefully consider vital questions: what are your main goals in this mentoring relationship, and in your research and collaboration? What do you want to achieve by the end of the relationship? How will this relationship prepare you for future steps?

Throughout the mentoring relationship, it's critical to develop SMART goals. Developing SMART goals will avoid the common mistake of stating vague goals that can seem significant (e.g. "improve communication skills"), but will be difficult to achieve without specific steps and resources. In contrast, developing SMART goals (e.g. "improve written communication skills toward writing proposals for funding by attending a writing bootcamp") will help direct your path and help achieve your goals. Slight variations of the SMART acronym have been used, but this version is provided to work with this curriculum.

- **S**pecific – What is the specific goal? Try to state the goal as concretely and simply as possible. How will you know if you succeeded? Break down large goals into simpler steps.
- **M**easurable – How will you measure or evaluate the goal, to determine whether or not you've achieved it? Take note that evaluating the goal doesn't always require a quantitative measurement.
- **A**chievable – Can you actually do this? Do you have the knowledge, skills and resources you need? Will you need to seek help from others? Are all parts realistic?
- **R**elevant – Is this goal worth achieving? Does it reflect your priorities and align with other goals?
- **T**imely – When is the deadline? When does each sub-task need to be done? What is a realistic timeline?

After the completion of each training module, consider developing one SMART goal related to that topic, where appropriate and applicable, to your current mentoring relationships. Reviewing the suggested action items in each chapter and using the following table below will help you set these goals. Take the relevant action items that are important for you, and make them more specific and actionable by responding to the questions in each column. Feel free to make copies of the following table below as needed.

Specific	Measurable	Achievable	Relevant	Timely
What is the specific goal? How will you know if you succeeded? Keep the goal simple and concrete. Break down larger goals into simple steps.	How will this goal be measured or evaluated? (Not all goals need to be measured quantitatively.) How will success be determined?	Can you actually do this? Do you have the knowledge, skills and resources you need? Will you need to seek help from others? Are all parts realistic?	Is this goal worth achieving? Does it reflect your priorities and align with other goals?	When is the deadline? When does each sub-task need to be done? What is a realistic timeline?
Example: I need to improve communication with my mentor by sharing a Google document as a record of our communications and action items.	*Success will be determined if we notice that fewer action items are dropped. My mentor will notice that I am increasing in my responsibilities, growing professionally, and able to become more independent.t*	*I (the mentee) will make sure I can obtain all the materials I need to be able to meet my deadlines. I will develop alternative plans to account for potential pitfalls.*	*I will define the central hypothesis I am testing and its relationship to an important unsolved problem. I will draw a map of the connections of my goal to the mission of, and to other projects in our lab and those of others.*	*A day before our regular meetings, I will insert updates and suggested agenda items, and send the link to my mentor; during the meetings, I will explain the updates and suggest action items. Within 24 hours of our meeting I will send a summary of my action items.*

Maintaining Effective Communication

Introduction

Good communication is a key element of any relationship and a mentoring relationship is no exception. It is critical that mentees reflect upon and identify characteristics of effective communication and take time to practice communication skills in the session and with their mentors.

Learning Objectives

Mentees will have the knowledge and skills to:

1. Communicate effectively across diverse dimensions including varied backgrounds, disciplines, ethnicities, positions of power, etc.
2. Accept and use constructive feedback
3. Identify different communication styles/ approaches
4. Use multiple strategies for improving communication (in person, at a distance, across multiple mentors, and within proper personal boundaries)

Strategies for Mentoring Up
1. Determine your mentor's preferred medium of communication (face-to-face, phone, or email) and acknowledge if it differs from your own personal preference.
2. Schedule a regular time to meet or check in with your mentor.
3. Keep track and share progress toward project and professional goals, both verbally and in writing.
4. Identify challenges and request your mentor's advice/intervention when appropriate.
5. Prepare for meetings with your mentor by articulating specifically what you want to get out of the meeting and how you will follow up after the meeting.

Facilitator Notes

Recommended Session Length on Maintaining Effective Communication (65 min)

Handouts/Materials for Session

- Make copies of participant handouts on pp. 25-28.

Introduction to session learning objectives and strategies for mentoring up (5 min)

Objective 1: Communicate effectively across diverse dimensions including varied background, disciplines, ethnicities, positions of power, etc. (20 min)

ACTIVITY #1: Case study discussion
Distribute the handouts *Balancing Multiple Mentor Expectations* and *Communication with Busy Mentor*

ASK: Invite participants to form small groups, review the case studies and then discuss the guiding questions that follow each case study (10 min).

FACILITATOR'S NOTE: The case studies offer two different scenarios relevant to postdocs. The facilitator can choose to use one or both.

DISCUSS: As a large group, discuss the following questions (10 min):

1. What do you wish you had discussed with your mentor(s) during your first three to six months as a postdoc?
2. How can you readdress those topics now?

FACILITATOR'S NOTE: Facilitators may want to revisit this conversation when discussing aligning expectations in the next session.

Objective 2: Accept and use constructive feedback (20 min)

ACTIVITY # 2: Communication Activity

ASK: Invite participants to review the handout *Communication Activity* in pairs and discuss the following questions as they relate to 1 or 2 of the statements on the handout (10 min):

1. How might the statement or questions be heard?
2. What was the likely intent of this statement or question?
3. How could you respond to this statement in a constructive manner?

DISCUSS: Come back together as a group to discuss this activity. You may want to use some of the questions below to help guide your discussion (10 min):

a. Have you ever been on the receiving end of some of these statements? How did that make you feel? How did you respond?

b. Have you ever said these things to a mentee? How did they respond?

c. How can you be sure that you heard feedback in the way that it was intended?

d. Would your reaction to this feedback change if these messages were coming from a mentor whose cultural background was different than your own (e.g., race, ethnicity, age, national origin, primary language, religion, etc.)?

e. Would a difference in gender affect communication in this case?

TELL: Often times we hear things very differently than they were intended. These differences can be amplified across cultural backgrounds, power differentials or even communication styles. It is important to develop a "benefit of doubt' philosophy in which you assume that the intention of the statement is good, even if it was not delivered well. This does not take the responsibility for good communication off the speaker, but rather encourages clarification before assumption.

Objectives 3 & 4: Identify different communication styles/ approaches and use multiple strategies for improving communication (in person, at a distance, across multiple mentors, and within proper personal boundaries) (20 min)

TELL: Let's review some communication strategies that may be useful in communication with your mentor. Refer participants to the handout *Effective Communication: Action Items*

ASK: In pairs, discuss the following questions (10 min):

a. Have you already implemented any of these strategies? How well have they worked for you?

b. Based on what we have discussed today, is there anything that you want to change about your communication with your mentor? What do you plan to do?

DISCUSS: As a group, discuss the following questions (10 min):

a. What are the characteristics of good communication? What does it look like?

b. Is there anything beyond what we've listed here (e.g., active listening, nonverbal communication)?

Participant Materials

Handout

Case Study: *Balancing Multiple Mentors' Expectations*

Dr. Jones is completing the second year of her postdoctoral fellowship and will be entering the job market in the next year. Dr. Jones found her second year very challenging, as she struggled to get manuscripts submitted. However, in just the last few months, Dr. Jones has figured out a schedule and an organizational system that is working well for her. She is finally feeling that her writing is moving forward and is on track to submit two manuscripts. Her primary research mentor is very pleased with Dr. Jones' progress and suggests that she not take on any new projects. However, last week another mentor who recently became department chair invited her to give several lectures for a course the mentor typically teaches. The mentor explained that he has less time to teach the course with added administrative duties and suggests the teaching experience would be good for Dr. Jones. Dr. Jones would like to say no because the timing is not good as she is trying to focus on getting her research published but fears the repercussions both in terms of their relationship and the opinion this mentor holds of her.

Guiding Questions for Discussion:

1. What advice could you give this mentee for framing a conversation with her mentors? Who else should she talk to?

2. What could have been done to avoid this situation?

3. How would you advise a peer or a mentee who is receiving conflicting career advice from mentors?

Handout

Case Study: *Communication with Busy Mentors*

Joseph, a first year postdoctoral researcher, is feeling a bit overwhelmed with his research mentor, Professor Madden, and isn't sure how to improve communication with her. He is happy to be a member of her research group as she publishes regularly in high impact journals, and recently won a prestigious award for her teaching. But, Joseph often feels overwhelmed during his weekly individual meetings with her. She gives him so many ideas, resources and tasks to complete that he has trouble writing everything down in his notes. She often uses acronyms or other terms unfamiliar to him but he's afraid to ask too many questions because she seems so busy with her own work and as a postdoc, he doesn't want to look incompetent. He has considered seeking advice from other members of the research group, but this team has been working together for a while and as the new member, he's feeling too timid to approach the others.

Guiding Questions for Discussion:

1. What are the problems that Joseph is facing with his research mentor?

2. How might Joseph adapt, to work better with Professor Madden? How can he improve his communication with her?

3. From the mentor's perspective, what might she perceive about Joseph?

4. What might the mentor do to work more effectively with him?

Adapted from: Mentoring 101 for the STEM Disciplines. Steve Lee, PhD, Graduate Diversity Officer for the STEM Disciplines, UC Davis, September 2016. Dr. Lee is currently the Assistant Dean of Diversity and Inclusion in the School of Humanities and Sciences at Stanford University.

Handout

Communication Activity

Work in pairs and discuss the following questions as they relate to 1 or 2 of the statements below:

1. How might the statement or questions be heard?
2. What was the likely intent of this statement or question?
3. How could you respond to this statement in a constructive manner?

Statement or Questions	**How might this statement be heard?**	**What is the likely intent of this statement?**	**How could you respond constructively to this statement?**
"Be on time to our group meetings from now on."			
"How much longer do you think it will take you to finish that manuscript?"			
"You will never get anywhere in research if you don't dig in and stick with problems until you solve them."			
"Clean up your office area."			
"I haven't seen you around the department much. Are you taking time off?"			
"I am not sure you have your priorities in order."			
"Is research something you're certain you want to pursue?"			

Adapted from Handelsman, J., Pfund, C., Miller Lauffer, S., and Pribbenow, C.M. 2005. Entering Mentoring: A Seminar to Train a New Generation of Scientists. University of Wisconsin Press: Madison, WI

Handout

Effective Communication: Action Items

1. Determine your mentor's preferred medium of communication (face-to-face, phone, or email) and acknowledge if it differs from your own personal preference.

2. Schedule a regular time to meet or check in with your mentor.

3. Keep track and share progress toward project and professional goals, both verbally and in writing.

4. Identify challenges and request your mentor's advice/intervention when appropriate.

5. Prepare for meetings with your mentor by articulating specifically what you want to get out of the meeting and how you will follow up after the meeting.

6. Develop a "benefit of the doubt" philosophy.

Aligning Expectations

Introduction

One critical element of an effective mentor-mentee relationship is a shared understanding of what each person expects from the relationship. Problems between mentors and mentees often arise from misunderstandings about expectations. Importantly, expectations change over time so frequent reflection and clear communication is needed to maintain a collaborative relationship.

Learning Objectives

Mentees will have the knowledge and skills to:

1. Effectively establish mutually beneficial expectations for the mentoring relationship.
2. Clearly communicate expectations for the mentoring relationship.
3. Align mentee and mentor expectations.
4. Identify and map mentor relationships and resources (optional; time-permitting)

Strategies for Mentoring Up
1. Ask your mentor for his/her expectations regarding a. mentees at your stage of career generally b. you as an individual scholar c. the research project
2. Share your expectations regarding: a. your career as a scholar and professional b. the research project
3. Ask your mentor about their primary priorities (e.g. upcoming proposal deadlines, seeking tenure and promotion, teaching, family obligations, etc.). Share about your own priorities (coursework, TA-ing, family obligations, etc.) also.
4. Ask others in the research group, who know your mentor better, about the mentor's explicit and implicit expectations.
5. Write down the expectations you agree to and revisit them often with your mentor. Use a mentor-mentee compact to formalize the expectations. The handouts in this chapter can help you better determine and communicate those expectations.

Facilitator Notes

Recommended Session Length for Aligning Expectations (80 min)

Handouts/Materials for Session

- Make copies of participant handouts on pp. 33 - 34
- Make copies of mentoring agreements/compacts that you plan to use for the session (see p. 35)
- Make copies of Additional Handouts on pp. 36 - 40 if you plan to incorporate these activities

Introduction to session learning objectives and strategies for mentoring up (5 min)

Objective 1: Effectively establish mutually beneficial expectations for the mentoring relationship. (20 min)

ACTIVITY #1: Case Study: Postdoc Blues

Distribute the handout *Postdoc Blues.*

TELL: Divide up into small groups. Read the case and discuss the guiding questions within your small groups. Ask for a volunteer in each group to record the discussion highlights and one volunteer to report out for the large group discussion (10 min).

DISCUSS: Large group discussion. Ask each group to report out on the main themes of their discussion (10 min).

NOTE: Facilitator records these themes on the whiteboard.

Objectives 2 & 3: Clearly communicate expectations for the mentoring relationship and align mentee and mentor expectations (55 min)

ACTIVITY #2: Prioritizing Research Mentor Roles

Distribute the *Identifying, Prioritizing and Communicating Your Needs* handout.

ASK: Ask participants to follow the instructions on the handout working in pairs (or triads) to assess their current mentoring needs and identify mentor roles. (5 min)

ASK: In pairs (or triads) ask participants to discuss their top 2 or 3 mentoring needs. (10 min)

DISCUSS: Ask the large group to summarize the top 2 roles revealed in pair discussions. Do all of these need to be fulfilled by ONE research mentor? Who else could be your mentor? (10 min)

ACTIVITY #3: Articulating Expectations (10 min)

DISCUSS: Ask the group to consider each of the following questions and discuss.

1. What exactly am I looking for (expecting) from this mentoring relationship (long-term and in the next few months)?
2. What do I expect from my mentors and what do they expect from me?
3. How do my mentors know what I am expecting or looking for?
4. Have we explicitly discussed these questions? If not, why not?

FACILITATOR'S NOTE: If some in the group are still struggling with articulating what exactly they are looking for in their mentoring relationship, consider using the additional handout *Questionnaire for Aligning Expectations in Research Mentoring Relationships* to aid mentees in discussing the above questions. Mentees should focus

specifically on the section of the questionnaire (early stage, middle stage, late stage) that best describes the stage of the relationship with their mentors.

ASK: Ask participants to review whatever written expectation document your training program uses for mentees and their mentors OR share examples of mentor/mentee expectation documents (not all participants may be in a training program where these documents exist) (5 min)

ASK: Consider each of the following questions individually: (10 min)

1. When was this document distributed?
2. When was it discussed?
3. When was it/is it revisited?
4. How is it helpful?
5. What doesn't it cover?
6. What expectations are not included that you have come to understand are implicit?

DISCUSS: As a large group, discuss the following question (5 min):

What changes might you suggest to these documents to better align expectations between mentors and mentees?

Additional Objective: Identify and Map Mentor Relationships and Resources (35 min)

FACILITATOR'S NOTE: In many cases, conversations around aligning and communicating expectations will lead to conversations around identifying multiple mentors and creating a mentor network to address all of the mentoring needs of the trainee. In the "Additional Handout," section, you can find two activities, "Mapping your Mentor Network" Parts 1 and 2. Depending on the length of discussion, each activity can take anywhere from 10 to 15 minutes to complete. This can be an effective exercise for trainees seeking to expand their mentor network. Below you will find instructions on how to facilitate these discussions.

ACTIVITY #4: Mentor Network Mapping

Distribute the *Mapping Your Mentor Network Part 1* Handout

ASK: Ask participants to follow the instructions on the handout working in pairs (or triads) to first identify mentors within and outside of their network who can fulfill any currently unmet mentoring needs, as identified in the previous activity. Then discuss strategies to identify and establish connections with other mentoring resources, locally or at a distance. (10 min)

DISCUSS: Ask the large group to summarize any insights or surprises and to name 1 or 2 new mentoring relationships or resources identified that will be sought out. (5 min)

Distribute the *Mapping Your Mentor Network Part 2* Handout

ASK: Ask participants to work individually and follow the instructions on the handout using different colored markers to build their network. They should use the previous two worksheets in order to help determine their current mentoring network, unmet needs, and potential resources and mentors they plan to follow up on (10 min)

DISCUSS: Ask two to three participants to share their map and insights to the large group using the following questions to guide discussion (10 min)

1. Which mentors or mentoring resources were newly identified? What are some effective next strategies to take based on these insights?
2. Are there any mentors in the network where expectations regarding the role to be filled are not aligned or well-communicated? If so, what strategies can be used to effectively achieve alignment?
3. Which needs continue to be unmet? What are some effective strategies for finding mentors and resources to meet those needs? What strategies have others in the group found useful for this purpose?

Participant Materials
Handout

Case Study: *Postdoc Blues*

Dr. Amy Rodgers is beginning her third year as a postdoctoral researcher at a large research university. To date she has enjoyed working on her mentor's research project but she is becoming anxious that she has not made much progress on her own independent research. Every time she tries to bring up her concerns with her mentor, it seems like her mentor can never find enough time to have a discussion focused on Dr. Rodgers' research and career goals. This situation is becoming frustrating for Dr. Rodgers as she likes her mentor and she understands that the past few months have been extremely busy for her mentor due to a host of factors (economic budget constraints, preparing a grant proposal, etc.). Being a politically astute researcher, Dr. Rodgers also understands that her working on her mentor's projects is an important component to the lab's continued publications and funding, and she is reluctant to make a "misstep" with this well-established, senior mentor, despite needing to make progress on her own independent research goals. Dr. Rodgers is also concerned that her recent interests are too divergent from her mentor's research program. Dr. Rodgers wants to stop feeling "stuck."

Guiding Questions for Discussion:

1. What factors are contributing to this situation?

2. What kind of conversations regarding expectations might have been helpful earlier in this relationship?

3. What kind of conversations would be helpful at this point? Who should be involved in these conversations?

Adapted from Pfund C., House S., Asquith P., Spencer K., Silet K., and Sorkness C. (2012). Mentor Training for Clinical and Translational Researchers. New York, NY: W.H. Freeman & Co.; Pfund C. and Handelsman J., eds. Entering Mentoring Series.

Handout

Identifying, Prioritizing, and Communicating Your Needs

Instructions:

1. Check the box next to the roles you currently need your mentor to play.
2. Circle the 3 roles that are priorities for you at this point in your career.
3. Choose one of the 3 circled roles and write down how you could ask for your mentors to play that role, or play it more effectively.
4. Practice what you would say to you mentor with a partner.

Check for Roles Currently Needed	Roles Mentors Can Play Across 5 Domains* of Attributes Needed for Effective Mentoring Relationships
	Research Skills
	Help me develop research skills specific to my area of focus
	Help me become a better science communicator (presenting and writing)
	Help me learn how to collaborate effectively
	Help me write grant proposals and seek other funding
	Interpersonal Skills
	Work with me to define and align the expectations we have for our relationship
	Provide me with constructive feedback
	Communicate honestly and build a trusting relationships with me
	Psychosocial Skills
	Help me build my research self-efficacy
	Help me build my career self-efficacy
	Help motivate me
	Cultural Diversity Skills
	Help me develop a sense of belonging in my program/ department
	Be open to conversations about diversity and how it impacts my training experience
	Help me address issues of bias and stereotype threat
	Sponsorship Skills
	Foster my independence
	Help me network (colleagues, funding sources, stakeholders)
	Help me find ways to better balance my work and personal life
	Help me navigate and explore career options

Adapted from Branchaw, J., Pfund, C. and Rediske, R. (2010). Entering Research: Workshops for Students Beginning Research in Science. W.H. Freeman & Co., New York.

**Domains described in: Pfund, C., Byars-Winston, A., Branchaw, J., Hurtade, S., Eagan, K. (2016) Defining Attributes and Metrics of Effective Research Mentoring Relationships. AIDS and Behavior, 20(2), 238-248.*

INSERT

Mentoring compact or other form of written expectation document from your own training program

If your program does not use one, examples can be found at:
http://mentoringresources.ictr.wisc.edu/ExampleMentoringCompacts

Additional Handout

Questionnaire for Aligning Expectations in Research Mentoring Relationships

Mentor / Supervisor:		Mentee / Student:	
Time Period:		Dept / Program:	

For each pair of statements, determine your preference. For example with statement pair #1, if you believe the ideal mentoring relationship focuses on common research interests, select 1, 2, or 3. Or if you think the ideal relationship focuses on similar working and communication styles, select 4, 5, or 6. Avoid filling in "3.5" for your responses.

This document originated from Ingrid Moses (Centre for Learning & Teaching, University of Technology, Sydney), was adapted by Margaret Kiley & Kate Cadman (Advisory Centre for University Education at the University of Adelaide), and was further revised by Steve Lee (Assistant Dean of Diversity & Inclusion at Stanford University; spl33@stanford.edu) and Stephanie House (Co-director of the NRMN Master Facilitator's Initiative at UW Madison; house2@wisc.edu).

Early Stages of the Mentoring Relationship and Choosing Mentors/Mentees			
1	In an ideal mentoring relationship, the mentor and mentee should have similar research interests	1 2 3 4 5 6	In an ideal mentoring relationship, both should have similar working and communication styles
2	In an ideal mentoring relationship, mentors should provide close supervision and guidance	1 2 3 4 5 6	In an ideal mentoring relationship, mentors should provide much freedom and independence for the mentees to explore and learn themselves
3	Mentors should only accept mentees when they have specific & deep knowledge of the mentee's research topic	1 2 3 4 5 6	Mentors can provide overall guidance, and so should feel free to accept mentees from a broad range of disciplines
4	A personal and friendly relationship between mentor and mentee is important for a successful relationship	1 2 3 4 5 6	A professional relationship is advisable to maintain objectivity for mentee and mentor during their work
5	The mentor is responsible for providing emotional support & encouragement to the mentee	1 2 3 4 5 6	Personal counselling and support are not the responsibility of the mentor
6	It's important for the mentor and mentee to challenge each other, and so disagreements will be common and acceptable	1 2 3 4 5 6	It's important for the mentor and mentee to have consensus, and so both should seek to maintain harmony in their relationship
7	The mentor should play a significant role in deciding on the research focus for the mentee	1 2 3 4 5 6	The research focus should be selected by the mentee
8	When choosing research topics, I prefer to work on projects with potential for high payoffs, even if it involves high risk	1 2 3 4 5 6	When choosing research topics, I prefer to work on projects that have a strong & safe chance of success, even if the payoff is low
9	The mentor should decide how frequently to meet with the mentee	1 2 3 4 5 6	The mentee should decide when she/he wants to meet with the mentor
10	The mentor should provide the rules and guidelines for the program or dept to the mentee	1 2 3 4 5 6	It is the mentee's responsibility to gather and learn the rules and guidelines of the program or dept
11	The mentor is responsible for finding funding until the mentee graduates or completes the program	1 2 3 4 5 6	Mentees are responsible for finding their own sources of funding
Middle Stages of the Mentoring Relationship			
12	The mentor should be the primary guide for the mentee in their academic and professional goals	1 2 3 4 5 6	The mentee should gather multiple mentors as they work toward their academic and professional goals
13	The mentor should be the first place to turn when the mentee has problems with the research project	1 2 3 4 5 6	Mentees should try to resolve problems on their own, including seeking input from others, before bringing a research problem to the mentor
14	The mentor should check regularly that the mentee is working consistently and finishing tasks	1 2 3 4 5 6	The mentee should work independently and productively, and ask for help when needed
15	The mentor should develop an appropriate plan and timetable of research and study for the mentee	1 2 3 4 5 6	The mentee should develop their own plan and timetable of research and study, and seek input from the mentor only as needed
Advanced Stages of the Mentoring Relationship			
16	The mentor should initiate the preparation of presentations, papers, and reports	1 2 3 4 5 6	Presentations, papers, and reports should be started with a first draft by the mentee
17	The mentor should insist on seeing all drafts of work (presentations, thesis, papers, etc) to ensure that the mentee is on the right track	1 2 3 4 5 6	Mentees should submit drafts of work (presentations, thesis, papers, etc) only when they want constructive criticism from the mentor
18	It's the mentor's responsibility to first explain about co-authorship early in the process	1 2 3 4 5 6	It's the mentee's responsibility to make sure there is mutual understanding about co-authorship
19	The mentor is responsible for providing career advice and professional connections to the mentee	1 2 3 4 5 6	Because professional options these days are numerous, mentees should seek career advice and connections from other sources

Additional Handout

Mapping Your Mentor Network (Part 1)

Based upon the results indicated in the worksheet titled "Identifying, Prioritizing, and Communicating Your Needs," utilize this worksheet to identify the constellation of mentors who will support your professional development priorities. Note that the MENTOR ROLES column has shortened descriptions which align with roles in "Identifying, Prioritizing, and Communicating Your Needs" worksheet.

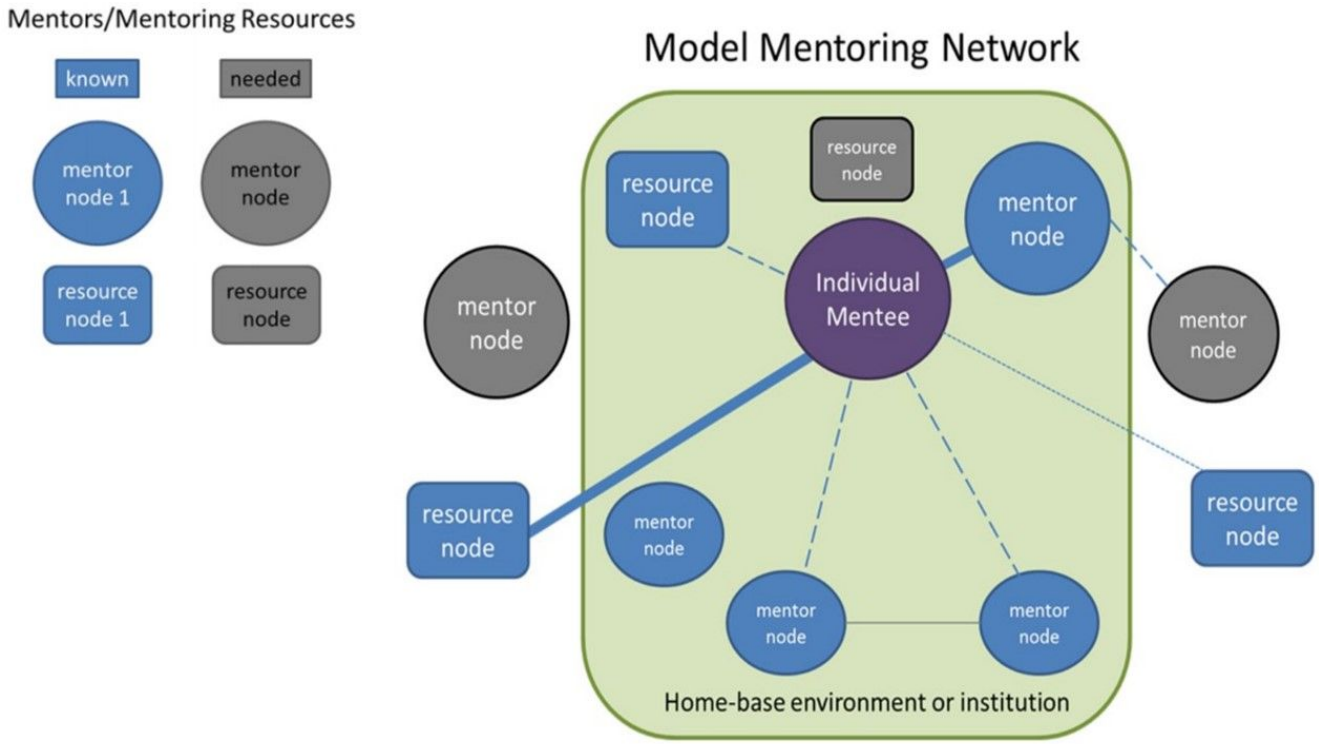
Mentor Roles	Mentor At My Institution	Mentor External to my Institution	Mentor Community Partner	Have no Mentor	Do Not Need a Mentor
Research Skills					
Area-specific research skills					
Science Communication					
Effective Collaboration					
Grant Proposals and Funding					
Interpersonal Skills					
Define and Align Expectations					
Constructive Feedback					
Honest Communication and Trust					
Psychosocial Skills					
Research Confidence					
Career Confidence					

Motivation					
Cultural Diversity Skills					
Sense of Belonging					
Diversity Conversations					
Addressing Bias and Stereotype Threat					
Sponsorship Skills					
Foster Independence					
Aid in Networking					
Aid in Work/Life Integration					
Aid in career option exploration and navigation					

Additional Handout

Mapping Your Mentor Network (Part 2)

Using the example of the mentor map below and the insights gained from discussions in Part 1, develop your own mentor map to aid in identifying and navigating your own mentoring relationships, as well as to establish new ones based on your unmet mentoring needs. Be sure to specifically label which needs will be addressed by each mentor and resource node. Where unknown nodes exist or relationships are yet to be established, take time to discuss within your group effective ways to move forward.



Mentoring Network Mapping Model.

Start out by placing a node that represents you in the center of the map. Then, draw a shape around it to represent your local department or institution (Green box in the example map above). Think about which mentors (circles) and mentoring resources (rectangles) are currently available to you, then draw them into your mentor map. Make use of the distance and connections among nodes to represent the relationships and interactions between you and your mentors or your engagement with a particular resource (thinner, dotted lines and thicker solid lines representing the strength of the relationship, and distance representing professional, physical, or emotional distance to a particular mentor). Finally, think about which of your mentoring needs continue to be unmet, and draw some differently-colored nodes to represent these (grey nodes in the above example).What are some effective strategies for identifying and connecting with these nodes in your mentor network?

Resourced from Montgomery, B. 2017 Mapping a Mentoring Roadmap and Developing a Supportive Network for Strategic Career Advancement, SAGE Open.

Addressing Equity and Inclusion

Introduction

Diversity, along a range of dimensions (cultural, racial/ethnic, sexuality, gender, neurotype, disability, etc…) offers both challenges and opportunities to any relationship. Learning to identify, reflect upon, learn from, and engage with diverse perspectives is critical to forming and maintaining both an effective mentoring relationship as well as a vibrant learning environment.

Learning Objectives

Mentees will have the knowledge and skills to:

1. Improve and expand understanding of equity and inclusion, and how diversity influences mentor-mentee interactions.
2. Recognize the impact that conscious and unconscious assumptions, preconceptions, biases, and prejudices bring to the mentor-mentee relationship and how to manage them.

Strategies for Mentoring Up
1. Seek training and professional development activities to understand the multiple aspects of your own identity and improve your working with diverse communities to build inclusive climates.
2. Be open to seeking out and valuing different perspectives.
3. Engage in honest conversation about individual differences with your mentor and co-workers.
4. Contribute positively to shared understandings and solutions to problems.
5. Talk to peers and mentors when you feel conflicted about the ways in which your personal identity intersects with your academic identity.

Facilitator Notes

Recommended Session Length on Addressing Equity & Inclusion (75 min)

Handouts/Materials for Session

- Index cards
- Make copies of participant handouts on pp. 44-47.

Introduction to session learning objectives and strategies for mentoring up (5 min)

NOTE: In preparation for this session, you may ask mentees to read the abridged "The Benefits and Challenges of Diversity," by Jo Handelsman and Eve Fine, included as an Additional Handout at the end of this chapter. Alternatively, this reading can be handed out as an additional resource following the session.

Objective 1: Improve and expand understanding of equity and inclusion, and how diversity influences mentor-mentee interactions. (20 min)

ACTIVITY #1: Impact of Assumptions (20 min)

TELL: We acknowledge the role of conscious and unconscious assumptions on the mentor-mentee relationship. Our beliefs and biases, whether explicit or implicit can influence mentor-mentee interactions. Assumptions are shaped by our cultural identities and have the potential to both expand or limit opportunities. Reflecting on and discussing them are important conversations to engage in.

ASK: On each index card, write an assumption (conscious or unconscious) you believe one of your primary mentors has about you. Use as many cards as you like and put them in the middle of the table when you are done. Then ask each participant to pick up 1-3 cards that do not belong to them. Ask each participant to read the cards they chose aloud. (10 min)

DISCUSS: As a large group, discuss reactions to the assumptions on the cards and where they may come from. (10 min)

NOTE: For further reading on research exploring cultural diversity and mentoring relationships see:
Byars-Winston, A, Womack, VY, Butz AR, McGee R. 2018. Pilot study of an intervention to increase cultural awareness in research mentoring: Implications for diversifying the scientific workforce. *Journal of Clinical and Translational Science*, 2(2): 86-94.

Objective 2: Recognize the impact that conscious and unconscious assumptions, preconceptions, biases, and prejudices bring to the mentor-mentee relationship and how to manage them. (50 min)

ACTIVITY #2: In the Eye of the Beholder
Distribute the handout with the abstracts for the two studies on gender bias in STEM fields

DISCUSS: Have the group read the abstracts to themselves and as a group discuss their first impressions and reactions to the abstracts (10 min)

Distribute the abstract for the study *Quality of Evidence Revealing Subtle Gender Biases in Science is in the Eye of the Beholder*, which studied the gendered reactions of STEM faculty to the same abstracts presented above.

DISCUSS: As a large group, discuss reactions to this third study, and on the subjective biases we as scientists can bring to the way we read research studies, particularly those that show unconscious biases in our fields exist. (10 min)

ACTIVITY #3: Case Study Discussion
Distribute the handout *What are You Doing in my Office?*

ASK: Invite participants to review the case study *What are You Doing in my Office* (5 min)

DISCUSS: Use the following questions to guide a large group discussion. (10 min)

1. Why do you think Dr. Robertson found Professor Kerry's first comments troubling?

2. Do you think that Dr. Robertson should say something during his meeting with Professor Kerry to address his apparent assumption that he was not Dr. Robertson? If so, what are some ways he could do so? Otherwise, what other strategies might be available to Dr. Robertson in this situation?

3. Have you ever experienced a similar situation, or heard of similar experiences? How did you respond?

ACTIVITY #4: Case Study Discussion
Distribute the Handout *Thinking About Leaving*

ASK: Ask participants to review the case study in groups of 3 or 4. While groups should read both case studies, each group should be assigned to answer questions from either part 1 or 2 of the case study (5 min)

DISCUSS: Have groups share their answers to the following questions and use them to guide a large group discussion (10 min)

Part 1:

1. What are some key themes in Dr. Gutierrez's experiences?

2. How do you think that her mentor's comment might have made her feel?

3. Have you ever experienced a similar situation, or heard of similar experiences? How did you respond?

4. What are some ways that Dr. Gutierrez can cope with these types of experiences?

Part 2:

1. What are some key themes raised in this second part?

2. How might you resolve the differences between their perceptions of Dr. Gutierrez's performance?

3. What might Dr. Robert's intent in asking about Dr. Gutierrez's experiences be and what might be the impact on Dr. Gutierrez of such a question?

4. How might Dr. Roberts proceed in the conversation to offer help.

Participant Materials
Handout

Science faculty's subtle gender biases favor male students (Moss-Racusin et al. PNAS, 2012)

Despite efforts to recruit and retain more women, a stark gender disparity persists within academic science. Abundant research has demonstrated gender bias in many demographic groups, but has yet to experimentally investigate whether science faculty exhibit a bias against female students that could contribute to the gender disparity in academic science. In a randomized double-blind study (n = 127), science faculty from research-intensive universities rated the application materials of a student—who was randomly assigned either a male or female name—for a laboratory manager position. Faculty participants rated the male applicant as significantly more competent and hireable than the (identical) female applicant. These participants also selected a higher starting salary and offered more career mentoring to the male applicant. The gender of the faculty participants did not affect responses, such that female and male faculty were equally likely to exhibit bias against the female student. Mediation analyses indicated that the female student was less likely to be hired because she was viewed as less competent. We also assessed faculty participants' preexisting subtle bias against women using a standard instrument and found that preexisting subtle bias against women played a moderating role, such that subtle bias against women was associated with less support for the female student, but was unrelated to reactions to the male student. These results suggest that interventions addressing faculty gender bias might advance the goal of increasing the participation of women in science.

The Matilda Effect in Science Communication: An Experiment on Gender Bias in Publication Quality Perceptions and Collaboration Interest (Knobloch-Westerwick et al. Science Communication, 2013)

An experiment with 243 young communication scholars tested hypotheses derived from role congruity theory regarding impacts of author gender and gender typing of research topics on perceived quality of scientific publications and collaboration interest. Participants rated conference abstracts ostensibly authored by females or males, with author associations rotated. The abstracts fell into research areas perceived as gender-typed or gender-neutral to ascertain impacts from gender typing of topics. Publications from male authors were associated with greater scientific quality, in particular if the topic was male-typed. Collaboration interest was highest for male authors working on male-typed topics. Respondent sex did not influence these patterns.

Handout

Quality of Evidence Revealing Subtle Gender Biases in Science (Handley et al, PNAS 2015)

Scientists are trained to evaluate and interpret evidence without bias or subjectivity. Thus, growing evidence revealing a gender bias against women—or favoring men—within science, technology, engineering, and mathematics (STEM) settings is provocative and raises questions about the extent to which gender bias may contribute to women's underrepresentation within STEM fields. To the extent that research illustrating gender bias in STEM is viewed as convincing, the culture of science can begin to address the bias. However, are men and women equally receptive to this type of experimental evidence? This question was tested with three randomized, double-blind experiments—two involving samples from the general public (n = 205 and 303, respectively) and one involving a sample of university STEM and non-STEM faculty (n = 205). In all experiments, participants read an actual journal abstract reporting gender bias in a STEM context (or an altered abstract reporting no gender bias in experiment 3) and evaluated the overall quality of the research. Results across experiments showed that men evaluate the gender-bias research less favorably than women, and, of concern, this gender difference was especially prominent among STEM faculty (experiment 2). These results suggest a relative reluctance among men, especially faculty men within STEM, to accept evidence of gender biases in STEM. This finding is problematic because broadening the participation of underrepresented people in STEM, including women, necessarily requires a widespread willingness (particularly by those in the majority) to acknowledge that bias exists before transformation is possible.

Handout

Case Study: "*I Can't See You Right Now*"

Dr. Robertson is an African-American first-year postdoctoral researcher who is excited to begin in his department. He's in the process of meeting with his mentor's collaborators to discuss the possibility of working with them on his research. He has scheduled a meeting with Professor Kerry, who is white, and approaches his office door at the appointed time. The office door is wide open, and so Dr. Robertson takes one step in, but no one is present. Immediately, Professor Kerry, seeing Dr. Robertson, says in a loud voice, "I can't see you right now. I have a meeting with Dr. Robertson."

Dr. Robertson is a bit flabbergasted, but is able to mumble that he's Dr. Robertson. Professor Kerry raises an eyebrow and appears surprised, sits into his office chair behind his desk, and quickly motions to an empty chair. Dr. Robertson talks with the professor and goes through his list of questions. While his research interests align with Professor Kerry's, he's feeling uncomfortable during the whole meeting as he feels that his presence in the office and department have been invalidated and questioned. As an African-American from a HBC, he's had similar experiences in other settings, but wasn't expecting this in academia.

Guiding Questions for Discussion:

1. Why do you think Dr. Robertson found Professor Kerry's first comments troubling?

2. Do you think that Dr. Robertson should say something during his meeting with Professor Kerry to address his apparent assumption that he was not Dr. Robertson? If so, what are some ways he could do so? Otherwise, what other strategies might be available to Dr. Robertson in this situation?

3. Have you ever experienced a similar situation, or heard of similar experiences? How did you respond?

Adapted from: Mentoring Up-Addressing Inclusion and Equity from the Student's Perspective; Brown and Lee 2019

Handout

Case Study: "Thinking About Leaving"

Part 1:

Dr. Gutierrez is in the second year of her postdoctoral work. She's working very hard but feels like she's constantly struggling. She gets extremely anxious during presentations and meetings with her mentor, where she's afraid of making mistakes. She's thought about quitting, but is afraid that leaving would simply confirm stereotypes that Latinas are not cut out for academia. She's heard several people say comments like, "Your English is so good," and "You're so articulate." After she won a teaching award for the class she teaches, her mentor remarked, "Congratulations, but be careful, you don't want teaching to take you away from the lab." She's very aware that she's the only Latina in the department, and feels like she's living in a fishbowl as people are judging her more closely and questioning if she'll be able to succeed. She's also feeling a lot of pressure from her family as a first-generation college student. Her parents talk constantly and proudly of her successes, but this talk also increases the pressure to serve as a role model for others in her extended family and community.

Guiding Questions for Discussion:

5. What are some key themes in Dr. Gutierrez's experiences?

6. How do you think that her mentor's comment might have made her feel?

7. Have you ever experienced a similar situation, or heard of similar experiences? How did you respond?

8. What are some ways that Dr. Gutierrez can cope with these types of experiences?

Part 2:

Dr. Peters, a third-year postdoc in the same lab as Dr. Gutierrez, is taking a break for lunch and sees her in the common eating area. When he asks how she is doing, he's surprised when she looks down and mumbles that she's been thinking of leaving. She says that she feels that she is constantly behind, trying to catch up, and struggles to feel competent. Dr. Peters is surprised because he's admired Dr. Gutierrez and envies her successes. She's won her teaching award and is close to submitting a manuscript for a primary author paper. He wonders if her thoughts on leaving are based on her experiences as the only Latina in the department. He wants to ask if this has been an issue, but hesitates and worries that this might be insensitive. He wants to be helpful but isn't sure whether or how to broach the subject.

Guiding Questions for Discussion:

5. What are some key themes raised in this second part?

6. How might you resolve the differences between their perceptions of Dr. Gutierrez's performance?

7. What might Dr. Robert's intent in asking about Dr. Gutierrez's experiences be and what might be the impact on Dr. Gutierrez of such a question?

8. How might Dr. Roberts proceed in the conversation to offer help?

Adapted from: Mentoring Up-Addressing Inclusion and Equity from the Student's Perspective; Brown and Lee 2019

Additional Handout

Benefits and Challenges of Diversity*

By Jo Handelsman and Eve Fine

The diversity of a university's faculty, staff, and students influences its strength, productivity, and intellectual personality. Diversity of experience, age, physical ability, religion, race, ethnicity, gender, and many other attributes contributes to the richness of the environment for teaching and research. We also need diversity in discipline, intellectual outlook, cognitive style, and personality to offer students the breadth of ideas that constitute a dynamic intellectual community.

A vast and growing body of research provides evidence that a diverse student body, faculty, and staff benefits our joint missions of teaching and research by increasing creativity, innovation, and problem-solving. Yet diversity of faculty, staff, and students also brings challenges. Increasing diversity can lead to less cohesiveness, less effective communication, increased anxiety, and greater discomfort for many members of a community.[1]

Learning to respect and appreciate each other's cultural and stylistic differences and becoming aware of unconscious assumptions and behaviors that may influence our interactions will enable us to minimize the challenges and derive maximum benefits from diversity.

This booklet summarizes research on the benefits and challenges of diversity and provides suggestions for realizing the benefits. Its goal is to help create a climate in which all individuals feel *"personally safe, listened to, valued, and treated fairly and with respect."* [2]

Benefits for Teaching and Research

Research shows that diverse working groups are more productive, creative, and innovative than homogeneous groups, and suggests that developing a diverse faculty will enhance teaching and research.[3]

Some findings are:

- A controlled experimental study of performance during a brainstorming session compared ideas generated by ethnically diverse groups composed of Asians, Blacks, Whites, and Latinos to those generated by ethnically homogenous groups composed of Whites only. Evaluators who were unaware of the source of the ideas found no significant difference in the number of ideas generated by the two types of groups. However, when applying measures of feasibility and effectiveness, they rated the ideas generated by diverse groups as being of higher quality.[4]

- The level of critical analysis of decisions and alternatives was higher in groups exposed to minority viewpoints than in groups that were not. Minority viewpoints stimulated discussion of multiple perspectives and previously unconsidered alternatives, whether or not the minority opinion was correct or ultimately prevailed.[5]

- A study of corporate innovation found that the most innovative companies deliberately established diverse work teams.[6]

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*Adapted and abridged from Fine and Handelsman (2005), included in *Entering Mentoring: A Seminar to Train a New Generation of Scientists.* Madison, WI: University of Wisconsin Press and Handelsman, Miller, and Pfund (2007).

- Data from the 1995 Faculty Survey conducted by UCLA's Higher Education Research Institute (HERI) demonstrated that scholars from minority groups have expanded and enriched scholarship and teaching in many academic disciplines by offering new perspectives and by raising new questions, challenges, and concerns.[7]

- Several investigators found that women and faculty of color more frequently employed active learning in the classroom, encouraged student input, and included perspectives of women and minorities in their coursework.[8]

Benefits for Students

Numerous research studies have examined the impact of diversity on students and educational outcomes. Cumulatively, these studies provide extensive evidence that diversity has a positive impact on all students, minority and majority.[9]

Some examples are:

- A national longitudinal study of 25,000 undergraduates at 217 four-year colleges and universities showed that institutional policies fostering diversity of the campus community had positive effects on students' cognitive development, satisfaction with the college experience, and leadership abilities. These policies encouraged faculty to include themes relating to diversity in their research and teaching, and provided students with opportunities to confront racial and multicultural issues in the classroom and in extracurricular settings.[10]

- Two longitudinal studies, one conducted by HERI in 1985 and 1989 with over 11,000 students from 184 institutions and another in 1990 and 1994 on approximately 1500 students at the University of Michigan, showed that students who interacted with racially and ethnically diverse peers both informally and within the classroom showed the greatest "engagement in active thinking, growth in intellectual engagement and motivation, and growth in intellectual and academic skills."[11] A more recent study of 9,000 students at ten selective colleges reported that meaningful engagement rather than casual and superficial interactions led to greater benefit from interaction with racially diverse peers.[12]

- Data from the National Study of Student Learning indicated that both in-class and out-of-class interactions and involvement with diverse peers fostered critical thinking. This study also found a strong correlation between "the extent to which an institution's environment is perceived as racially nondiscriminatory" and students' willingness to accept both diversity and intellectual challenge.[13]

- A survey of 1,215 faculty members in departments granting doctoral degrees in computer science, chemistry, electrical engineering, microbiology, and physics showed that women faculty played important roles in fostering the education and success of women graduate students.[14]

Challenges of Diversity

Despite the benefits that a diverse faculty, staff, and student body provide to a campus, diversity also presents considerable challenges that must be addressed and overcome.

Some examples include:

- Numerous studies have reported that women and minority faculty members are considerably less satisfied with many aspects of their jobs than are majority male faculty members. These aspects include teaching and committee assignments, involvement in decision-making, professional relations with colleagues, promotion and tenure, salary inequities, and overall job satisfaction.[15]

- A study of minority faculty at universities and colleges in eight Midwestern states showed that faculty of color experience exclusion, isolation, alienation, and racism in predominantly white universities.[16]

- Multiple studies demonstrate that minority students often feel isolated and unwelcome in predominantly white institutions and that many experience discrimination and differential treatment. Minority status can result from race, ethnicity, national origin, sexual orientation, disability and other factors.[17]

- Women students, particularly when they are minorities in their classes, may experience unwelcoming climates that can include sexist use of language, presentation of stereotypic or disparaging views of women, differential treatment from professors, and/or sexual harassment.[18]

- When a negative stereotype relevant to their identity exists in a field of interest, women and members of minority groups often experience "stereotype threat"—the fear that they will confirm or be judged in accordance with the stereotype. Such stereotype threat exists for both entry into a new field and for individuals already excelling in a specific arena. Situations or behaviors that heighten awareness of one's minority status can activate stereotype threat.[19] Research demonstrates that once activated, stereotype threat leads to stress and anxiety, which decreases memory capacity, impairs performance, and reduces aspirations and motivation.[20] Human brain imaging, which shows that activating stereotype threat causes blood to move from the cognitive to the affective centers of the brain, indicates how situational cues reduce cognitive abilities.[21]

- Research has demonstrated that a lack of previous positive experiences with "outgroup members" (minorities) causes "ingroup members" (majority members) to feel anxious about interactions with minorities. This anxiety can cause majority members to respond with hostility or to avoid interactions with minorities.[22]

Examples of assumptions or biases in academic contexts:
Several research studies conclude that implicit biases and assumptions can affect evaluation and hiring of candidates for academic positions. These studies show that the gender of the person being evaluated significantly influences the assessment of résumés and postdoctoral applications, evaluation of journal articles, and the language and structure of letters of recommendation. As we attempt to enhance campus and department climate, the influence of such biases and assumptions may also affect selection of invited speakers, conference presenters, committee membership, interaction, and collaboration with colleagues, and promotion to tenure and full professorships.

- A study of over 300 recommendation letters for medical faculty hired by a large American medical school found that letters for female applicants differed systematically from those for males. Letters written for women were shorter, provided "minimal assurance" rather than solid recommendations, raised more doubts, and included fewer superlative adjectives.[23]

- In a national study, 238 academic psychologists (118 male, 120 female) evaluated a junior-level or a senior-level curriculum vitae randomly assigned a male or a female name. These were actual vitae from an academic psychologist who successfully competed for an assistant professorship and then received tenure early. For the junior-level applicant, both male and female evaluators gave the male applicant better ratings for teaching, research, and service and were more likely to hire the male than the female applicant. Gender did not influence evaluators' decisions to tenure the senior-level applicant, but evaluators did voice more doubts about the female applicant's qualifications.[24]

- A study of postdoctoral fellowships awarded by the Medical Research Council of Sweden found that women candidates needed substantially more publications to achieve the same rating as men, unless they personally knew someone on the selection panel.[25]

- A 2008 study showed that when the journal *Behavioral Ecology* introduced a double-blind review process that concealed the identities of reviewers and authors, there was a significant increase in the publication of articles with a woman as the first author.[26]

Conclusion

Diversity is not an end in itself.

Diversity is a means of achieving our educational and institutional goals. As such, merely adding diverse people to a homogeneous environment does not automatically create a more welcoming and intellectually stimulating campus.

Long-term efforts, engagement, and substantial attention are essential for realizing the benefits that diversity has to offer and for ensuring that all members of the academic community are respected, listened to, and valued.

References

Complete references, including links to articles, are available online:
http://wiseli.engr.wisc.edu/docs/benefits_references2012.pdf

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Promoting Mentee Research Self–Efficacy

Introduction

Self-efficacy is the perceived confidence people have in their ability to perform a given task or skill. Self-efficacy has a tremendous impact on behavior; people who lack self-efficacy in relation to a certain skill set are less likely to perform tasks relating to that skill set. Increasing your research self-efficacy can increase the likelihood that you will successfully perform research tasks, pursue a research career, and make important contributions to your research team. There are four factors that build self-efficacy beliefs: mastery experience, vicarious experience, social persuasion, and emotional/physiological states. Knowing how these four sources influence you will help you have a better understanding of what makes you feel more confident.

Learning Objectives

Mentees will:

1. Define self-efficacy and its four sources.
2. Identify signs of self-efficacy that resonate with them when conducting research- related tasks.
3. Articulate their role in building their own research self-efficacy.
4. Assess the influence of others on their research self-efficacy.
5. Devise strategies to support others' research self-efficacy.

Strategies for Mentoring Up
1. Recognize the sources of self-efficacy that work well for you and share them with your mentor.
2. Seek out opportunities in your research experience to build your skills as a way to boost your research self-efficacy.
3. Do you know of others who have done similar research and have been successful? Talk to those researchers and use their actions as a model for your own. Consider your role models and what research skills (and attitudes) are being modeled by them.
4. Be aware of how you cope with research challenges and setbacks; do they make you feel more or less confident about the work that you do? Ask your mentor and others to share strategies for what they do when they hit a wall and how they cope with challenges/setbacks in research.
5. Consider how feedback, both positive and critical, affects your beliefs in your capabilities as a researcher. Ask for specific, constructive feedback from your mentor.

Facilitator Notes

Recommended Session Length on Promoting Self-Efficacy (60 min)

FACILITATOR NOTE: You will notice that terms "confidence" and "self-efficacy" are used interchangeably throughout this session. Although there are some distinctions between confidence and self-efficacy, the term confidence can and has been used to convey the idea of self-efficacy to a lay audience. In this spirit, the session begins by talking about confidence and then transitions to the definition of self-efficacy and its sources. We do this to help ease participants into the terminology and definitions. In reviewing the learning objectives with participants, you may want to tell participants that you will begin with a broader conversation about research confidence before turning to the definition of self-efficacy.

Provide Resources before session and ask participants to review prior to meeting:

- Handout #1 (page 59)
- Weblink: http://psychology.about.com/od/theoriesofpersonality/a/self_efficacy.htm?p=1
- Paper: Margolis, H and McCabe P.P. (2006). Improving Self-Efficacy and Motivation: What to Do, What to Say. (2006). Intervention in School and Clinic. Vol 41(4): 218–227.

HANDOUTS in Session:

- Make copies of pages 59-66.
- Index cards for activity (alternatively, ask participants to take out a sheet of paper)

Welcome and Introductions (5 min)

Learning Objective 1: Identify signs of self-efficacy that resonate with mentees when conducting research-related tasks. (10 min)

TELL: To get started, think about your research career thus far and some of the things that have happened to you that made you feel more or less confident about your ability to be a researcher.

TELL: On side 1 of card/paper: Write down something that made you feel more confident in your ability to do research. *Note:* For mentees with limited research experience, you may wish to adapt this prompt and invite mentees to recall a moment in their own life when they felt more confident as a learner.

TELL: On side 2 of card/paper: Write down something on your current research to-do list which you are not feeling confident about your ability to complete.

ACTIVITY: Anatomy of a Research Success Experience
Format: Small group discussion (pairs or triads), then large group discussion of common themes

DISCUSS: In pairs, share what you wrote on side 1 and discuss the questions below (5 min)

- What made you feel more confident? What were the events, people, and experiences that contributed to the success?
- What factors contributed to your sense of confidence?

Large group (5 min)

ASK: Reflect on your confidence to do research. What were the factors that contributed to your confidence?

TELL: By reflecting on what contributed to your confidence you will likely see the series of well-timed, well-placed events, people, and your actions that contributed to your success. You can apply these factors to challenges that you are encountering now or in the future. Each of these factors can contribute to your confidence, or self-efficacy.

Learning Objective 2: Define self-efficacy and its four sources. (10 min)
TELL: What is self-efficacy? Self-efficacy is a measure of confidence one has in his/her ability to successfully complete a given task. It answers the question "can I do this?"

Self-efficacy is informed by four sources: mastery experience, vicarious experience, social persuasion, and emotional/physiological state.

Here are some examples:
Mastery experience – a past accomplishment or success: "I've done this before"
Vicarious experience – a role model that has successfully completed the task: "I've seen others do this before"
Social persuasion – a social or verbal message reinforcing ability or effort: "Others have told me that I can do this"
Emotional/physiological state – an emotional, affective, or physiological response: "Doing research in the lab makes me happy," "I get excited when I'm doing field research," or "My heart starts racing when I begin to conduct an experiment."
Each of these four sources has the potential to both raise *and* lower your self-efficacy for research.

TELL: Review Handout #1: Self-Efficacy Tool Box and think about which factors work well for you, and which ones do not. (2 min)

DISCUSS (in pairs): Go back to what you wrote on side 1 of your card and see if what you have written aligns with a particular source of self-efficacy. (3 min)

DISCUSS (as a group): Were some efficacy sources more common than others? If so, what were they? (5 min)

The facilitator may wish to write down each of the four sources down on a flipchart or whiteboard. As mentees share their stories, encourage them to categorize them into one of the four sources of self-efficacy.

NOTE: Use this as a time to talk about whether all sources work the same across domains. Some sources may be more effective some domains than others. Some may work better for different ages/career stages than others. Also talk about differences. For example, some of the literature on self-efficacy suggests that individuals of different genders and cultural backgrounds may rely upon different sources, or find certain sources of

self-efficacy more salient than others. Encourage trainees to be mindful of the sources that work well for them, and to seek out opportunities in their research experience that will allow them to boost their self-efficacy for research.

Learning Objective 3: Articulate your role in fostering your own research self-efficacy (10 min)
ACTIVITY: Stair Steps

TELL: In this activity, we will focus more on identifying your strengths and what you can do increase your self-efficacy to do research.

TELL: (Pass out Stair Steps Handout) Look at Side 2 of your card. Put your challenging task at the top of the stairs. Now break it down into at least 2-3 steps.

ASK: What sources of self-efficacy could help get you to the first step? What about helping you get from the first step to the second? How can you help build your own self-efficacy along the way?

TELL: Let's look at an example. If you look on the back of the Stair Steps Handout, you'll see an example of someone who did not feel confident in their ability to do a particular analysis on data they collected. They have written out the steps that they plan to take to help get them familiar with the analysis enough to successfully do it and write it up. At Step 2, they have identified 3 of the sources of self-efficacy that will help them to boost their confidence to ultimately complete this task.

TELL: In pairs, discuss the ways that you could support or find support to increase your self-efficacy at **one** of these steps using **at least three** of the sources of self-efficacy. Be sure to consider:

- The four sources of self- efficacy
- Frequency of strategies
- Immediacy of strategies (timing)
- Methods for strategies (form)

NOTE: This exercise can be used to break larger projects or problems into smaller, more manageable steps. In doing so, you will also have the opportunity to think about the type of support that you may need from your mentor each step of the way. You can use the steps exercise with yourself or in conversations with your mentor to discuss each of your expectations for the task and to help you recognize each successful step and celebrate it.

Alternate activity/adaptations: Facilitators can use one of the following scenarios for the Star Steps Exercise, ask participants as a group to help break the task down into manageable steps, and identify ways to support self-efficacy at each step. These can also be used in lieu of the example given on Handout #2 . Facilitators can also have mentees think back to a task that they successfully completed and identify the steps that they took to complete that task.

"I need to do an analysis of data, but I don't feel confident in my ability to do it and write it up"
Step 1: Find online readings and tutorials that will walk you through the process
Step 2: Attend a workshop or training where you can learn how to do the analysis with others
Step 3: Try the analysis with a different set of data which has already been analyzed so you can compare

"I need to get started on my grant/research proposal, but I don't know where to start"
Step 1: Ask your mentor for an example of a successful grant/research proposal
Step 2: Come up with a writing plan, back-mapping your deadlines from the submission deadline
Step 3: Invite colleagues to join a writing group with you

Learning Objective 4: Assessing the influence of others on your self-efficacy (15 min)

TELL: In this activity, we will consider the influence that mentors may have on your self-efficacy.

ACTIVITY: "The Power of Social Persuasion."
Format: small group discussion (pairs or triads), then large group discussion of common themes

TELL*:* Pass around or display Directions for the activity "The Power of Social Persuasion." Have a volunteer read the first round of feedback out loud. Then ask participants to break out into small groups or pairs to discuss the questions included on the handout. (3 min)

Adaptations: You may use the alternative version and accompanying discussion questions included in the participant materials. Adapted discussion questions are listed below [in brackets] next to the original discussion question.

DISCUSS: Have the participants discuss the following questions in pairs (5 min):

- How do you feel right now? Write down some of the emotions and/or physical responses you are feeling.
- How does this feedback influence your self-efficacy to continue to prepare this grant proposal/ [manuscript]for publication?
- How does it influence your self-efficacy to write future successful grant proposals [manuscripts]?
- How might you go about looking to other sources (i.e., individuals, messages, or experiences) that could increase your self-efficacy to revise this grant proposal/ [manuscript]?

DISCUSS: Have participants share highlights of their discussions with the group and take part in a larger discussion of the following questions (7 min):

- How does this feedback influence your mentoring relationship? How does it influence your desire to collaborate or ask them for feedback with this individual in the future?
- How might this feedback be perceived differently if you were at an earlier stage in your career/training (e.g., as a first year undergraduate/ graduate student?) at a later stage (e.g., as a full professor or senior scientist?) How does your background (e.g., your gender, race, prior research writing experience) influence your perception of this feedback?
- What are the assumptions that you find yourself making about the person giving you this feedback?
- How do you maintain your confidence in the face of criticism?
- Would you address how this feedback was delivered with your mentor? Why or why not?
- Let's look at the same feedback framed in a different way (display or hand out the second side of feedback). How does your reaction to this feedback differ from the first example? What are the assumptions that you find yourself making about the person giving you this feedback?
- What is the intent behind each of these feedback examples? Is it the same?

TELL: Teachers and Mentors are in a position to have a profound influence on how trainees perceive their capabilities, for better or for worse. One way to deal with critical feedback that may lower your self-efficacy is to consider the intent of what your mentor told you. Social persuasions are just one source of self-efficacy; at any given time, one or all four of the sources of self-efficacy may influence your confidence. When you receive feedback that lowers your self-efficacy, look to other sources to verify your capabilities (e.g., I have successfully navigated the ups and downs of preparing a grant proposal/ manuscript before).

Learning Objective 5: Supporting others' self-efficacy (10 min, time permitting)

TELL: Next, let's consider what you would do to support others' self-efficacy. We will read and discuss this case with a focus on self-efficacy beliefs related to research

Case Study: "Application Procrastination." Have someone read the case on page 11 aloud (1 min). Then follow guiding questions below for large group discussion (9 min). DISCUSS: *Guiding Questions*

- What are some questions that you could ask to determine if this is related to their confidence or other factors (e.g., interest?)
- What do you think is one important thing that your colleague might want to hear to keep them engaged in grant writing?
- Knowing what you know about the four sources of self-efficacy, what can you do to boost their confidence?

Participant Materials

Handout

The Self-Efficacy Tool Box – What Can You Do to be a More Confident Researcher?
From: http://psychology.about.com/od/theoriesofpersonality/a/self_efficacy.htm?p=1

Remember:
Self-efficacy: belief in one's ability to achieve a specific goal or task. Self-efficacy is situation-specific self-confidence. Simply put, *"Can I do this?"*

Strong self-efficacy beliefs create interest, persistence, actual college degree completion, and career pursuits in science and research fields (see references for specific studies).

Here are some efficacy-building strategies to try:

Mastery experience
- Think about your past successes (e.g., a personal "significant research moment"). What contributed to that success? How can that be applied to your future research endeavors? Think about your past success during the research experience in particular or academics in general ["If you did it before you can do it now"].
- Apply strategies and habits that have contributed to your past success in research to the task at hand.
- Recall the things you are doing right; devise strategies to improve your skill in areas that are challenging to you.

Vicarious experience
- Do you know of others who have done similar research and have been successful? Talk to those researchers and use their actions as a model for your own. Consider your role models and what research skills (and attitudes) are being modeled by them.
- Be aware of what skills and behavior you are observing about coping with research challenges and setbacks; do they make you feel more or less confident about the work that you do? Ask others to share strategies for what they do when they hit a wall and how they cope with challenges/setbacks in research.
- Think of examples of others who struggled but made it (i.e., successful in research)

Social persuasion
- Seek out individuals that provide encouragement and support to you in your research. Social persuasions relating to a specific effort or ability can be particularly influential.
- Ask for specific, constructive feedback from your mentors.

Emotional/Physiological state
- Be aware of positive (enjoyment) or negative moods (anxiety) that you have related to research/the lab
- Attend to negative, anxiety-related feelings (e.g., negative self-talk that you are not as smart as other researchers)
- Acknowledge and normalize when things are difficult; "It's supposed to be hard, new things usually are."

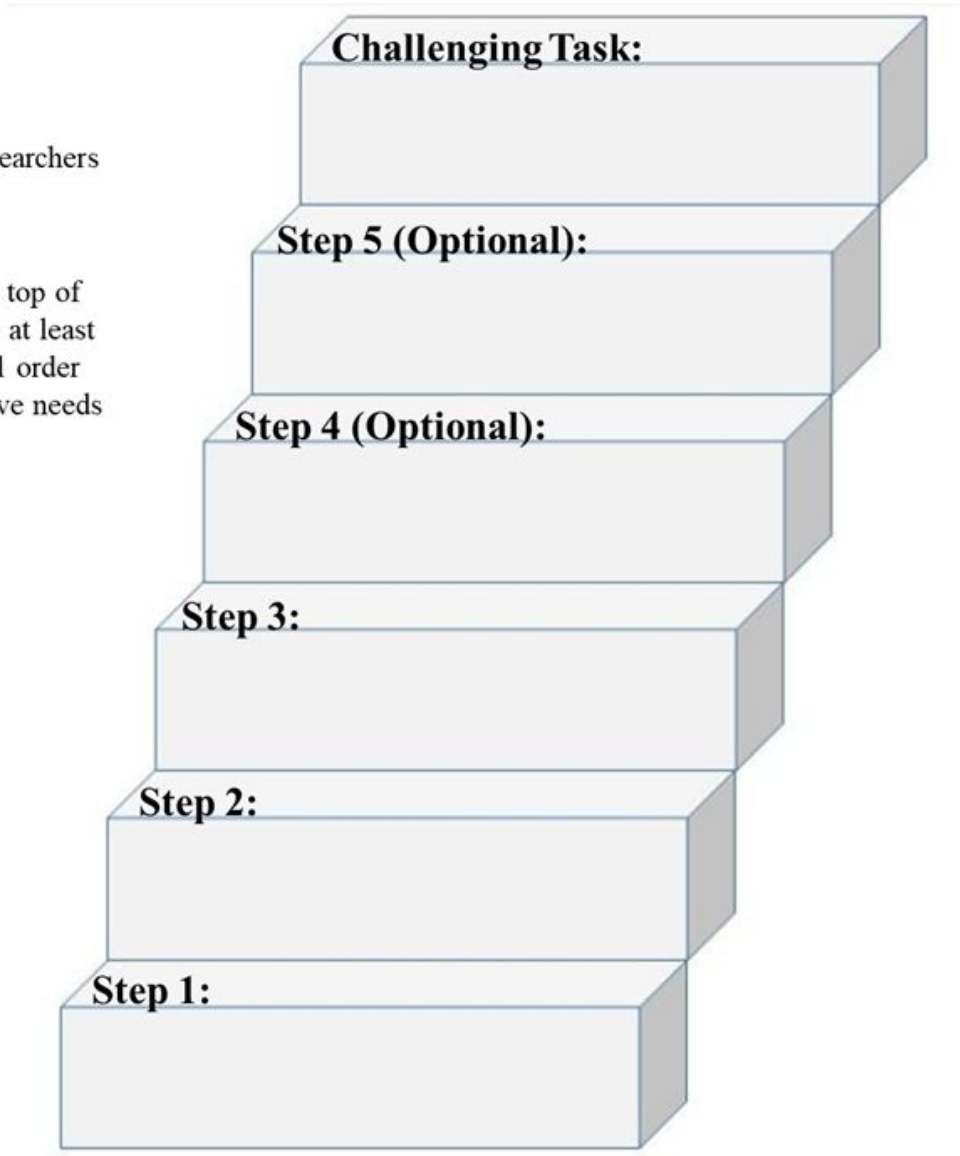
Handout

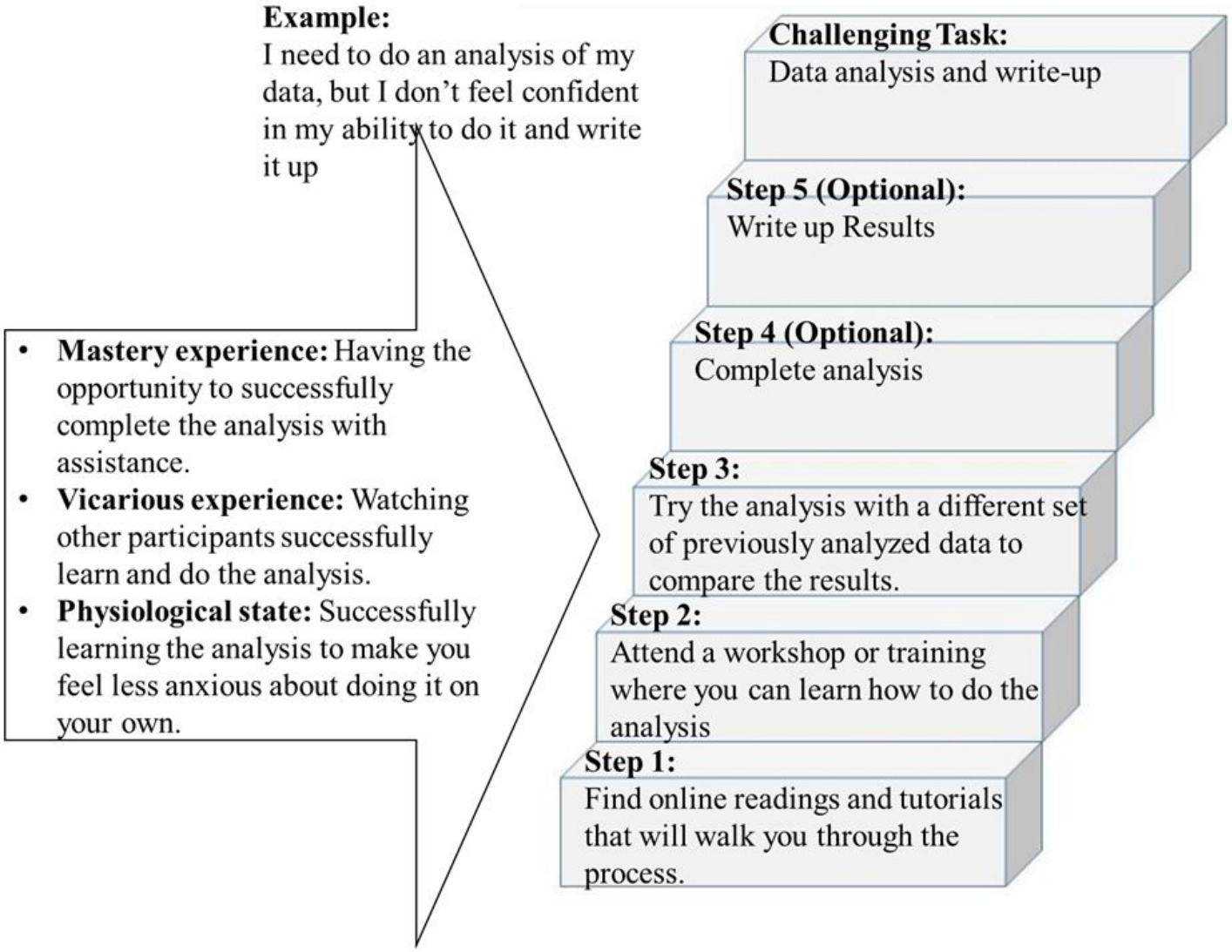
Stair Steps:

Skill Development for Future Researchers

Instructions:

Write your challenging task at the top of the stairs. Now break it down into at least 2-3 steps. Place them in sequential order beginning with the skill you believe needs to come first on the bottom step.




Example:
I need to do an analysis of my data, but I don't feel confident in my ability to do it and write it up
Challenging Task:
Data analysis and write-up
Step 5 (Optional):
Write up Results
Step 4 (Optional):
Complete analysis
Step 3:
Try the analysis with a different set of previously analyzed data to compare the results.
Step 2:
Attend a workshop or training where you can learn how to do the analysis
Step 1:
Find online readings and tutorials that will walk you through the process.
• Mastery experience: Having the opportunity to successfully complete the analysis with assistance.
• Vicarious experience: Watching other participants successfully learn and do the analysis.
• Physiological state: Successfully learning the analysis to make you feel less anxious about doing it on your own.

Handout
The Power of Social Persuasion

Directions: You have written the first draft of a grant proposal for your mentor. You spent a lot of time working on the proposal and are really pleased with the progress that you have made as a researcher and writer since joining your mentor's research lab. You send the manuscript to them for feedback. Now, imagine that you have received an email from your mentor with this feedback:

I have included some edits for grammar and clarity in the document. The proposal needs substantial work before I see it again. You have cited a lot of prior research in the introduction and literature review, but it is disorganized and difficult to follow. The method and expected results sections are okay, but I am not convinced of the importance of this research based on this draft. Once you have made these changes, let me know and I will take another look. I do not want to waste any more of my time on this until this proposal has been drastically improved.

Questions for Discussion:

- How do you feel right now? Write down some of the emotions and/or physical responses you are feeling.
- What are the assumptions that you find yourself making about the person giving you this feedback?
- How does this feedback influence your confidence in your ability to continue to prepare this grant proposal?
- How does it influence your confidence in your ability to write future successful proposals?
- How might you go about looking to other sources (i.e., individuals, messages, or experiences) that could increase your self-efficacy to revise this proposal?

Now, consider the same feedback framed in a different way:

This is a good first draft of the grant proposal. I have included some edits for grammar and clarity in the document. I can tell that you have put in a lot of time and effort into reviewing the literature. The method and expected results are clearly articulated and are explained in a way that should be accessible to a broad audience, which should leave us well-prepared to present and eventually publish this work. The implications section needs some work, particularly where you are trying to make the case for the importance of this study. I think you could also spend a little more time in the introduction setting up the study and doing a little foreshadowing for the reader. I would like to review the proposal again once you have addressed these comments, but I have every confidence that you can get this draft to where it needs to be.

- How do you feel after receiving this feedback?
- What are the assumptions that you find yourself making about the person giving you this feedback?

Handout
The Power of Social Persuasion [Alternate Version]

Directions: You have written the first draft of a manuscript for which your mentor is a coauthor. You spent a lot of time working on the manuscript and are really pleased with the progress that you have made on this paper. You send the manuscript to them for feedback. Now, imagine that you have received an email from your mentor with this feedback:

I have included some edits for grammar and clarity in the document. The manuscript needs substantial work before I see it again. You have cited a lot of prior research in the introduction and literature review, but it is disorganized and difficult to follow. The method and results are okay, but the manuscript will not be ready to submit to the editor until the discussion is further developed. Once you have made these changes, let me know and I will take another look. I do not want to waste any more of my time on this until this manuscript has been drastically improved.

Questions for Discussion:

- How do you feel right now? Write down some of the emotions and/or physical responses you are feeling.
- What are the assumptions that you find yourself making about the person giving you this feedback?
- How does this feedback influence your confidence in your ability to continue to prepare this manuscript for publication?
- How does it influence your confidence in your ability to write future successful manuscripts?
- How might you go about looking to other sources (i.e., individuals, messages, or experiences) that could increase your self-efficacy to revise this manuscript?

Now, consider the same feedback framed in a different way:

This is a good first draft of the manuscript. I have included some edits for grammar and clarity in the document. I can tell that you have put in a lot of time and effort into reviewing the literature. The method and results are clearly articulated and are explained in a way that should be accessible to a broad audience, which should please the journal editor when we submit it. The discussion section needs some work, particularly where you are trying to make the case for how our study extends on what is currently known. I think you could also spend a little more time in the introduction setting up the study and doing a little foreshadowing for the reader. I would like to review the manuscript again once you have addressed these comments, but I have every confidence that you can get this manuscript to where it needs to be.

How do you feel after receiving this feedback?

Handout
Application Procrastination

A colleague is writing a NIH Loan Repayment Program grant proposal. This will be their first extramural grant submission. The deadline is quickly approaching, and your colleague mentions that they have been procrastinating on getting started with their application because they are not sure that they can write a successful grant application. You think that they may be experiencing low-self-efficacy.

Guiding Questions for Discussion:

- What are some questions that you could ask to determine if this is related to their confidence or other factors (e.g., interest?)
- What do you think is one important thing that your colleague might want to hear to keep them engaged in grant writing?
- Knowing what you know about the four sources of self-efficacy, what can you do to boost their confidence?

Achieving Independence

Introduction

A goal in any mentoring relationship is for the mentee to achieve independence. Defining what independence looks like in a particular field and at various career stages is essential. Dialogue between mentor and mentee about what an independent mentee knows and can do are important conversations to have throughout the mentoring relationship.

Learning Objectives

Mentees will have the knowledge and skills to:

1. Define independence, its core elements, and how those elements change over the course of a mentoring relationship.
2. Identify the benefits and challenges of achieving independence, including the occasionally conflicting goals of achieving independence and achieving grant-funded research objectives.

Strategies for Mentoring Up
1. With your mentor, define what it takes to do independent work in your field.
2. Define a series of milestones to independence with your mentor and set goals for meeting these milestones as part of your research plan.
3. Ask peers and mentors to share with you their strategies towards achieving independence.

Facilitator Notes[1]

Recommended Session on Achieving Independence (35 min)

Handouts/Materials for Session

- Make copies of handouts pp. 70-71.
- Flipcharts (optional if there is a whiteboard)

Objective 1: Define independence, its core elements and how those elements change over the course of a mentoring relationship.

Activity #1: Indicators of achieving independence (15 min)

Distribute the handout *Indicators of Achieving Independence*

ASK: Please describe your definition of independence. What does independence look like across career stages? Include in your discussion what it means at your institution and how that might differ from other places.

TELL: We recognize that independence looks different at various stages of a researcher's career. As we list the elements of independence, let us also note the most appropriate career stage for each element.

You may want to record the ideas generated in this discussion on a whiteboard or flipchart, writing elements of independence along a continuum based on the discussion. The continuum should stretch from 1st year graduate student/ master student to finishing PhD student to postdoc and to junior faculty and/or non-academic position relevant to research.

NOTE: Some elements of independence include:

1. Advanced knowledge of discipline, including expertise in their sub-area.
2. Ability to critically read the literature and find answers to questions through extended literature searches and consulting experts.
3. Ability to write a grant proposal for an entire research project.
4. Ability to design and give an oral presentation on their work at a national meeting.
5. Ability to design experiments for an entire grant proposal and conduct them.

ASK: Do you think the list we generated is the same list your mentor would generate? Why or why not?

Objective 2: Identify the benefits and challenges of fostering independence, including the occasionally conflicting goals of fostering independence and achieving grant-funded research objectives (15 min)

Activity #2: Case Study: Independent Research?

Distribute the handout *Independent Research*.

ASK: Ask the participants to review the case study independently for two to three minutes.

DISCUSS: As a group, discuss the following questions:

1. What are the main themes raised in this case study?

[1] *Facilitator notes for this activity adapted from Pfund, Brace, Branchaw, Handelsman, Masters & Nanney. Mentor Training for Biomedical Researchers. Pfund C. and Handelsman J., eds. Entering Mentoring Series. New York, NY: W.H. Freeman & Co. Advance online publication.*

2. What could have been done to avoid this situation? What should the mentor do now? What should the mentee do?
3. How is independence redefined in a restricted funding climate and an era of collaborative research/team science?

Participant Materials
Handout

Indicators of Achieving Independence

Graduate/ Medical Students	Postdocs	Junior Faculty	Researcher (non-academic setting)
Write an abstract	Write a manuscript	Write a grant	Lead a research team

Handout

Case Study: *Independent Research?*

Dr. Klein is very excited about the manuscript she is writing with her mentor Dr. Janco. The paper reports on research she has been conducting as a postdoctoral fellow working with Dr. Janco. Dr. Klein feels strongly that the manuscript clearly describes her unique contributions to the study design and analysis and is hoping to be first author on the paper. When Dr. Klein meets with Dr. Janco to discuss the paper, she is surprised to discover that Dr. Janco is less than enthusiastic about the paper. Dr. Janco informs Dr. Klein that her theoretical framework is not sufficiently different from his own work to claim it as her unique contribution. Dr. Janco says that the paper needs to be revised so that it demonstrates an independent direction of research. Dr. Klein leaves the meeting frustrated, disappointed, and unsure how to proceed.

Guiding Questions for Discussion:

1. What are the main themes raised in this case study?

2. What could have been done to avoid this situation? What should the mentor do now? What should the mentee do?

3. How is independence redefined in an era of collaborative research?

From Pfund C., House S., Asquith P., Spencer K., Silet K., and Sorkness C. (2012). Mentor Training for Clinical and Translational Researchers. New York, NY: W.H. Freeman & Co.; Pfund C. and Handelsman J., eds. Entering Mentoring Series.

Seeking Professional Development

Introduction

Professional development activities are sometimes seen as distractions from the core business of doing research, but are critically important to identifying and successfully meeting the mentee's long-term career objectives.

Learning Objectives

Mentees will have the knowledge and skills to:

1. Identify the roles mentors play in their overall professional development
2. Develop or revise their individual development plan IDP
3. Recognize and engage in open dialogue on balancing the competing demands, needs, and interests of mentors and mentees, e.g., research productivity, grant funding, creativity and independence, career preference decisions, non-research activities, personal development, work-family balance, etc.

Strategies for Mentoring Up
1. Promoting Professional Development: a. Create an Individual Development Plan (IDP) to set goals and guide your professional development, using resources such as Science Career's myIDP website (http://myidp.sciencecareers.org/). b. Seek out and engage multiple mentors to help you achieve your professional goals. c. Ask peers and mentors to discuss with you the fears and reservations you may have about pursuing a certain career path.

Facilitator Notes[2]

Recommended Session for Seeking Professional Development (70 min)

Handouts/Materials for Session

- Make copies of handouts on pp. 75-82.

Introduction to session learning objectives and strategies for mentoring up (5 min)

Objective 1: Identify the roles mentors play in their overall professional development (30 min)

ACTIVITY #1: Brainstorming Mentor Roles in Professional Development

ASK: In pairs, please list all of the roles mentors can or should play in the professional development of their mentee, beyond research training. (5 min)

DISCUSS with entire group the roles each pair listed. You may want to record the ideas generated in this discussion on a whiteboard or flipchart. (15 min)

NOTE: Some elements of professional development include:

Networking-social and professional
Socialization to local professional culture
Finding funding
Managing staff, role definition
Time management
Leadership skills
Writing IRB protocols
Career path exploration and guidance
Work-life balance
Public speaking
Research ethics
Writing skills
Drafting a grant budget
Fostering informal mentoring relationships
Job interview skills
Mentor training

DISCUSS with entire group the following questions: (10 min)

1. Which of the roles on the list are the most important? Why?
2. Are there some roles on the list that should not be the mentor's concern? Why?
3. How do you identify which roles your mentor can serve?
4. How do you determine if you need to seek out another mentor to help further your professional development?

[2]*Facilitator notes for this activity adapted from Pfund, Brace, Branchaw, Handelsman, Masters & Nanney. Mentor Training for Biomedical Researchers. Pfund C. and Handelsman J., eds. Entering Mentoring Series. New York, NY: W.H. Freeman & Co. Advance online publication.*

Objective 2: Develop a strategy for guiding professional development using some form of written format (15 min)

ACTIVITY #2: Reviewing Individual Development Plans (IDP) and Mentoring Plans

REVIEW individually: Participants review example plans individually and make notes on them to indicate which aspects of the plans they would like to adopt in their own professional development plan. Some mentees may already use such plans and may wish to share their own versions. (15 min)

TELL: Suggest that IDPs be used in the mentor selection process. Mentors have found them helpful as a means of assessing fit.

NOTE: Additional examples are available at: https://mentoringresources.ictr.wisc.edu. Participants may also wish to visit http://myidp.sciencecareers.org where they can develop their IDP through a guided, online process.

Objective 3: Engage in open dialogue on balancing the competing demands, needs, and interests of mentors and mentees (20 min)

ACTIVITY #3: Case Study: Looking for Harmony
Distribute the handout *Looking for Harmony.*

ASK: Ask participants to review the case study independently for two to three minutes.

DISCUSS: As a large group, discuss the guiding questions following the case.

NOTE: Encourage mentees to return to their compact (if applicable) and include text on how both they and the mentor are expected to communicate a sudden change in the work plan due to health issues, family issues, etc., and how they will move forward.

Participant Materials

Handout
Examples of Individual Development Plans (IDPs)

Example #1: University of Pittsburgh

Example #2: Duke University

Example #3: University of California-Davis

Additional examples and resources:
UW-Madison IDP https://grad.wisc.edu/pd/idp/ This general IDP form is relevant to all disciplines and it integrates with the DiscoverPD framework and online tool.

Examples of mentoring compacts/contracts for all career stages, UW-Madison Institute for Clinical and Translational Research. https://ictr.wisc.edu/mentoring/mentoring-compactscontracts-examples/

American Association for the Advancement of Science (AAAS) My Individual Development Plan (IDP) http://myidp.sciencecareers.org**.** Develop your own IDP through a guided, online process.

*EXAMPLE #1: POSTDOCTORAL INDIVIDUAL DEVELOPMENT PLAN**

Individual Development Plan for the Next Year

An Individual Development Plan is a professional tool which outlines objectives that you and your mentor/supervisor have identified as important for your professional development. A comprehensive review of your career goals and objectives identified at the beginning of your appointment and during your semi-annual appraisal provide constructive feedback from your mentor/supervisor that can help you become an independent investigator.

Career Goals/ Objectives	Educational Activities	Research Projects Products/Dates
Goal One: Objective 1. 2. 3.		
Goal Two Objective 1. 2. 3.		
Goal Three Objective 1. 2. 3.		

Please describe the plan that you and your mentor have for your transition from your current position to the next position.

Additional Comments:

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*Adapted from IDP used with postdocs at the University of Pittsburgh Schools of the Health Sciences. http://www.caph.pitt.edu/PostDocSemiAnnualEval.pdf Accessed 04/13/12

*EXAMPLE #2: MENTORING PLAN WORKSHEET**

YOUR GOALS

Take some time to think about and write down your research and professional goals. You may want to articulate one- and five-year goals. For example, a short-term goal might be "to complete a series of experiments" and a long-term goal might be "to have enough publications to get a faculty job."

Short-term Goals (next year)	**Long-term Goals (next 5 years)**
1.	1.
2.	2.
3.	3.

IDENTIFY MENTORSHIP NEEDS

Identify competencies that you will need to gain expertise in to reach your goals (see Table below for examples). Identify people who can assist you in achieving these competencies and in meeting your goals. These can be mentors internally at your institution, or at other institutions. A blank grid is included on the next page to help you organize your thoughts. Put your initial thoughts down on paper before you approach a mentor, and then revise it as your relationship changes.

Designing research	Establishing goals
Writing grants	Finding funding
Managing your career	Managing staff
Leading teams	Preparing for promotion
Cultural competence	Navigating institution
Organizational dynamics	Managing conflict
Speaking before groups	Knowing career paths
Teaching effectively	Hiring personnel
Collaborating effectively	Managing budgets
Managing data	Mentoring others
Giving feedback	Evaluating literature
Assessing students	Medical informatics

POTENTIAL MENTORS

Identify people who can assist you in developing the competencies you identified and therefore help you to reach your goals. For each potential mentor, identify objectives, develop a list of what you can offer, and propose outcomes. Put your initial thoughts down on paper before you approach a mentor, and then revise it as your relationship changes.

APPROACHING MENTORS

We suggest that you first approach mentors by sending an e-mail that includes a request for a meeting, a brief summary of your goals, and why you think there would be a good fit between you and the mentor. Let potential mentors know how you are hoping to work with them, such as one-on-one, as one of many mentors, or as part of a mentoring team or committee. You might want to let them know how you think they would be able to contribute.

Managing Relationships with Your Mentors

Relationships should be nurtured and respected. If you and your proposed mentor develop a working relationship, have some guidelines for how you will work together. Here are some tips:

1. Schedule standing meetings ahead of time and keep them
2. Give your mentor(s) plenty of time to review drafts of grants and manuscripts
3. Don't be a black hole of need – limit the number of requests you make of any given mentor
4. Develop authorship protocols so that expectations are clear
5. Saying thank you is priceless

Mentoring Plan					
Mentor	***Long and/or Short Term Goal*** *(e.g. manage own research group)*	***Competency*** *(e.g. learn how to mentor)*	***Activity*** *(e.g. mentor an undergrad)*	***What I can offer*** *(e.g. increase lab's capacity to do research)*	***Outcome*** *(e.g. increased productivity in lab)*

*Adapted from Ann J Brown, MD MHS, Vice Dean for Faculty, Duke University School of Medicine. Accessed 5/28/10 at http://facdev.medschool.duke.edu

*EXAMPLE #3: MENTORING WORKSHEET**

Mentor: _____ Mentee: _____
Date of Meeting: _____

Goal: Research ⛁ Goal met ⛁ Making Progress ⛁ No Progress

Accomplishments:_____
_____
_____

Obstacles:_____
_____
_____

New goal or strategy to overcome obstacles (if needed):_____
_____

Goal: Teaching ⛁ Goal met ⛁ Making Progress ⛁ No Progress

Accomplishments:_____
_____
_____

Obstacles:_____
_____
_____

New goal or strategy to overcome obstacles (if needed):
_____
_____

Goal: Service ⛁ Goal met ⛁ Making Progress ⛁ No Progress

Accomplishments:_____
_____
_____

Obstacles:_____
_____
_____

New goal or strategy to overcome obstacles (if needed):
_____
_____

Goal: Self Development ⛁ Goal met ⛁ Making Progress ⛁ No Progress

Accomplishments:_____
_____

_____

Obstacles: _____

_____

_____

New goal or strategy to overcome obstacles (if needed):

_____

_____

Goal: Networking ⛁ Goal met ⛁ Making Progress ⛁ No Progress

Accomplishments:_____

_____

_____

Obstacles: _____

_____

_____

New goal or strategy to overcome obstacles (if needed):

_____

_____

Goal: Work/Life Balance ⛁ Goal met ⛁ Making Progress ⛁ No Progress

Accomplishments:_____

_____

_____

Obstacles:

_____

_____

_____

New goal or strategy to overcome obstacles (if needed):

_____

_____

Goal: Additional Mentors ⛁ Goal met ⛁ Making Progress ⛁ No Progress

Accomplishments:_____

_____

_____

Obstacles:_____

_____

_____

New goal or strategy to overcome obstacles (if needed):

_____

_____

*Accessed from University of California-Davis on 5/15/10 at
www.ucdmc.ucdavis.edu/.../NewCareerMtrgMentoringUpdateWkst.doc

Handout

Case Study: *Looking for Harmony*

Dr. Melanie Anderson is a first year postdoctoral fellow supported by a NIH T32 training grant. Dr. Anderson is expecting her first child and would like to request a flexible work schedule that would allow her to work from home two days a week for 6 months once her child is born. However, Dr. Anderson has not raised this issue with the T32 program director who has stressed that postdocs in the program are expected to be in the office every week day to maximize interactions with faculty, mentors and other postdocs. The other postdocs in the program have few family commitments and are in the office daily at least 50 hours/week. Dr. Anderson fears that making this request will make her look as if she is less serious about her research career.

Guiding Questions for Discussion:

1. How can the concept of workforce flexibility fit into an overall individual development plan?

2. As a mentee how do you communicate with your mentor or research supervisor the value of a work environment that has "family friendly" work policies?

3. How do differences in mentor/mentee gender impact these discussions?

4. As a mentee how do you address generational differences (with respect to work ethic, work-life integration, or other areas) that arise with your more senior mentors?

5. How can peer mentors be supportive?

Adapted from curricular materials developed by Dennis Durbin, MD, MSCE and Emma Meagher, MD (2015). The Children's Hospital of Philadelphia Research Institute and the University of Pennsylvania Perelman School of Medicine.