

The American Occupational Therapy
Foundation & American Occupational
Therapy Association's

Promoting Integrity in the Next Generation of Researchers:

*A Curriculum for Responsible
Conduct of Research in
Occupational Therapy*

Part 2



UNIVERSITY OF MINNESOTA



2005

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Promoting Integrity in the Next Generation of Researchers

AUTHORSHIP

Student Reading

OBJECTIVES

1. Discuss how the history of a work, responsibility for the work, and accurate credit for the work determine assigned authorship, acknowledgment, and author order.
2. Apply authorship principles and rules to case examples.
3. Discuss how professional cultures differ regarding authorship and author order.
4. Feel empowered to discuss authorship issues with involved parties.

READING

Occupational therapy researchers have an ethical obligation to the profession, study participants, funders, and colleagues to share their study's findings. Dissemination may occur through:

- **Publication** in refereed journals (i.e., journals in which articles are reviewed by peers before publication), nonrefereed journals (i.e., journals in which works are written by staff or reviewed by an editor), textbooks, monographs, pamphlets, or Internet postings
- **Oral presentations** or **research posters** at professional meetings
- **Media** (e.g., videos or lecture audiovisuals)

Researchers should choose the forum for dissemination on the basis of the target audience for the findings. Refereed journals such as the *American Journal of Occupational Therapy (AJOT)* and the *OTJR: Occupation, Participation, and Health*, offer the most permanent and most strongly valued way to disseminate research information.

Authorship Policies

Publications, presentations, and media list their authors to provide a public record of both responsibility and credit. Several associations and journals have developed policies to help guide decisions about authorship. Although these policies differ in their details, each tries to ensure that persons who deserve authorship are listed as authors and that those who do not deserve authorship are not listed as authors. The policies generally agree that to be an author, a person must do the following:

- Make a major contribution to concepts, design, analysis, or interpretation of the work
- Participate in writing the article or revising its content

- Have a voice in the final approval of publication
- Be willing to accept responsibility as well as credit for the work
- Be able to present, discuss, interpret, and defend the work, its analyses, and its conclusions

The American Psychological Association (APA), the International Committee of Medical Journal Editors (ICMJE), and *AJOT* each have their own policies of authorship.

The APA (2001) policy conforms to the basic requirements noted earlier, stating, *Authorship is reserved for people who make a primary contribution to and hold primary responsibility for the data, concepts, and interpretation of results for a published work (Huth, 1987). Authorship encompasses not only those who do the actual writing but also those who have made substantial scientific contributions to a study.* (p. 6)

The policy further indicates that holding a powerful position, such as chair of a department, does not in itself earn authorship.

The ICMJE is a major association whose authorship policy is used by more than 400 biomedical journals, including those sponsored by the American Medical Association (AMA). The ICMJE (2004) policy states,

Authorship credit should be based on 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published. *Authors should meet conditions 1, 2, and 3.*

The ICMJE (2004) policy further notes that “acquisition of funding, collection of data, or general supervision of the research group, alone, does not justify authorship.”

The *AJOT* (n.d.) policy requires each author to certify that he or she “has made substantial contributions to (a) the conception and design, acquisition of data, or analysis and interpretation of data; (b) drafting and revising the article; *and* (c) approval of the final version. Further, each author takes public responsibility for the work” (emphasis in original).

Author Order

Professions differ in their conventions for deciding the order for listing authors. Most agree that the principal contributor to the study should be listed first. This author is sometimes called the *first* or *primary* author.

In most professions, subsequent authors are listed in order of decreasing contribution. This order has one interesting deviation: biomedical researchers often attach special credit to the final author. Under this convention the final or *anchor* author is assumed to have mentored the project and is accorded credit and responsibility similar to the credit and responsibility accorded to the first author. Although this convention is widespread and deeply rooted in biomedical professions, it is not part of the written record. The *AMA Manual of Style* (9th edition) does *not* mention anchor authorship. Indeed, that edition indicates that author order,

from first to last, with first represents greatest credit and responsibility and last least credit and responsibility (AMA, 1998).

Some biomedical journals have adopted alphabetical listing of authors. In such cases one person may be identified as the *corresponding author* (i.e., the author to be contacted by readers and the one with whom the editor corresponded). This individual is generally perceived as the primary author with greatest credit and responsibility for the work. If a corresponding author is not identified, the study may indicate an *overall guarantor* (i.e., an author who publicly takes overall responsibility for the work's integrity). This individual is generally credited with the largest contribution to the work.

Preventing Authorship Problems

Experienced researchers agree that authorship should be discussed early in a collaboration—before work on the study begins. This is true regardless of who is involved in the collaboration—clinicians, students, faculty, or a combination of researchers. Early, frank discussion allows all collaborators to understand their choices. It ensures that collaborators who want a limited role will not be harassed and that collaborators who want authorship will understand their tasks and invest the appropriate energy to complete them. Discussion should accomplish the following:

- Identify and assign the tasks that are key for authorship and those that warrant only acknowledgment.
- Link authorship to the quality and the completion of work tasks, not to an individual's role or title.
- Renegotiate authorship and author order when new tasks emerge, people enter or leave the collaborative group, or people alter their responsibilities.

Although most teams rely on an oral agreement, some collaborative research groups draft written agreements to ensure that all parties understand and agree to the group terms.

Student-faculty collaborations can create two types of authorship problems: (1) faculty members taking unearned authorship or inappropriate author order and (2) students receiving such authorship or author order. In the first situation, the faculty member's behavior is obviously unethical. In most cases a faculty member who advises a research student will meet the criteria of authorship through his or her contribution to design, analysis, editing of intellectual content, and approval of publication. If this is not the case, the faculty member should not be listed as an author. Instead, he or she should be acknowledged.

The second problem is more insidious and often surprises both faculty and students. Giving a student authorship of a paper on which he or she may have made only a small contribution may seem generous and harmless. Fine and Kurdek (1993) argue that inappropriately listing a student or inflating a student's author order may give the student "an unfair advantage professionally" indicating "a level of competence that he or she does not actually have" (p.

1143). It also “may falsely represent the individual’s scholarly expertise” (p. 1143), leaving the student author unable to meet employers’ expectations.

Acknowledgments

In most studies, some individuals or organizations are involved that make an important contribution to the work, but are inappropriate for authorship. These individuals and organizations should be publicly acknowledged (Magnus and Kalichman, 2002).

An acknowledgment is not a vague *thank you*. Acknowledgments are public recognitions for specific contributions. Thus, acknowledging a person for “her great help in the study” is inappropriate; whereas acknowledging a person for “her advice on study design” or “his editing, data collection, and help with participant recruitment” is very appropriate. It is likewise appropriate to acknowledge people for their assistance with data analysis, photography, financial support, donation of materials, and other specific meaningful contribution.

Listing an individual’s or an organization’s name in a work can imply that the individual or the organization endorses the work. Therefore, many journals require that the primary author verify that she or he has permission to use the name in the acknowledgement. Some journals go a step further and require written permission by the individual or organization being named.

The order in which acknowledgements are listed varies. Some authors list people (e.g., participants and colleagues) first and funders last. The APA (2001) recommends that the order be funders first and people last.

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Promoting Integrity in the Next Generation of Researchers

AUTHORSHIP

Determining Authorship/Acknowledgment - Case 1

Latisha Doe, a master's OT student, is studying the effects of a device that controls upper extremity tremors and dyskinesias in Parkinson's disease during feeding. The outcome measures of her study were the time needed to complete a standard self-fed meal and the fatigue level of clients after a meal with and without the device. The study is being conducted at a local Parkinson's disease center. Both Latisha's university and the center's Institutional Review Boards (IRBs) have approved the study. Latisha thinks her work contributes to the field and is eager to publish her results.

Latisha received the following help in her research from the following people:

Cathy, an OTR at a local Parkinson's disease center made sure that all clients received a card explaining Latisha's study. Cathy also prescreened everyone who expressed an interest in the study, and distributed the devices to the participants. When Latisha was unable to come to the clinic, Cathy explained the experimental protocol, gained informed consent, and trained participants on the device's use. Cathy serves as one of three committee members on Latisha's master's thesis defense committee. Cathy's employer has reduced her departmental committee work to give her time to help Latisha.

Dr. Lange, MD is the Medical Director of Rehabilitation Services at the Parkinson's center.. He is interested and supportive of Latisha's project. He often asks Latisha how the study is progressing. He authorized space for Latisha to store the feeding devices on site. In addition, the Center requires an "on-site Principal Investigator (PI)" and Dr. Lange permitted his name to be used on the IRB form. Dr. Lange is currently being considered for an administrative research award toward which research and publication are weighed. Dr. Lange has offered to write Latisha a reference and has suggested that he present the study findings at the next national Parkinson's conference. Latisha hopes to get a job at the Parkinson's center in the future and to continue her research with other patient populations seen at the center.

Mary graduated several years ago from the OT program and was awarded a baccalaureate degree. At the time, her senior project recommended the general design for a prototype of the current feeding device. Dr. Jones was her advisor and suggested the topic originally because Mary had a previous degree in mechanical engineering. Mary never published her project, but she did make a "working model" of the prototype. Latisha improved on this model with the help of Alice (see below). Dr. Jones doesn't know where Mary lives and neither does the alumni association.

Dr. Jones (OT faculty) suggested that Latisha study the device and is Latisha's primary advisor. Dr. Jones keeps up-to-date on the literature on feeding devices and has shared these resources with Latisha. Latisha has also been given a copy of Mary's report. Dr. Jones met with Latisha regularly to discuss the study and to review and edit Latisha's scholarly project as Latisha prepared for her defense. Dr. Jones paid for half of Darnell's time (see below).

Alice is a graduate engineering student and Latisha's friend. Alice received extra credit for the project as part of a "Designing for the Disabled" class (crediting Latisha as her collaborator). She helped Latisha design the final version of the feeding device, and got a friend to manufacture 3 prototypes at a total cost of \$2,000 (paid for out-of-pocket by Latisha and by a \$1,500 grant from the Engineering School to support student inter-departmental collaborations. Alice was the principal investigator of the grant). Alice also wrote the technical description of the device that was used in Latisha's scholarly report, and will be used in the article. She made several important editorial suggestions that improved the article.

Darnell, a paid statistician, suggested the statistical analyses and consulted on data interpretation (he was paid \$300 for his work; one half was paid by Dr. Jones and one half was paid by Latisha).

Format based on Case B3 in Korenman, S.G. & Shipp, A.C. (1994) *Teaching the responsible conduct of research through a case study approach*. Washington, DC: Association of American Medical Colleges

Student Questions

1. What type of attribution should be given to each individual when Latisha submits the study for presentation at the AOTA conference or for publication in the *American Journal of Occupational Therapy*? Be ready to discuss your reasoning for each choice.

Person	Author?	Acknowledgment?	Nothing
Cathy , OTR: access to participants, screening, consent/training/data collection when Latisha can't come.			
Dr. Lange , MD, Medical Director of the Rehabilitation Dept.: supportive, arranged for storage, listed as in-house PI, needs this authorship for award, has power for future employment.			
Mary , past OT student, developed prototype with Dr. Jones. Whereabouts unknown.			
Dr. Jones (faculty) suggested topic, is primary advisor, gave resources, gave important input on thesis paper, paid part of the cost of the statistician.			
Alice , engineering student: helped Latisha design and fabricate study device - received extra class credit, helped get grant for prototype manufacture, entered data, helped with scholarly paper required for Latisha's degree.			
Darnell , paid statistician, suggested statistical analyses consulted on interpretation			

2. Did you award anyone authorship as a gift or out of fear of repercussions? Since authorship or acknowledgment costs you nothing, why not take the attitude of *the more the merrier*?
3. Is the decision about authorship entirely Latisha's to make? Should she consult with others? Who and why?
4. Latisha feels pressure to give authorship to persons who do not, in her opinion, deserve it. Could this have been avoided? How?

Discussion Points

This case is best presented to students **before** they receive information on the American Psychological Association's (APA's) or International Committee of Medical Journal Editor's (ICMJE's) criteria for authorship. Students should be encouraged to give their reasoning for each choice, and to discuss each choice's relative merits.

Often students assume that persons who are paid for their efforts should **not** be authors. This treats authorship as a gift to be given only to those who volunteer their time, rather than as a record of the intellectual process. This decision would exclude both Darnell and Dr. Jones from authorship since both are paid for their work.

If we apply ICMJE or APA policies to this situation, Latisha, Dr. Jones, and Darnell are the most reasonable authors. Neither Cathy nor Dr. Lange contributed to the intellectual development or processing of the study, although both have certainly earned acknowledgments.

It would be inappropriate to list Mary as an author because she is uninvolved with the current study. It would also be appropriate to include mention of Mary in the manuscript's *Acknowledgements*, but this may or may not be possible. Many journals require that individuals or institutions give permission before the name is listed in the *Acknowledgements* section, since this could be construed as an endorsement. The American Occupational Therapy Association has been willing to assist persons seeking colleagues for legitimate purposes. If Mary is a current member, Latisha may be able to find her. The case offers an opportunity to encourage students to remain in contact with their advisors until their own work is disseminated.

The most difficult issue is Dr. Lange's inappropriate request for authorship. Sometimes such situations can be handled by asking the individual to review the authorship policies of the school or journal. Dr. Lange might recognize that his contribution and responsibility for the study are inappropriate for authorship. But most students see that once he requests authorship, Latisha is in a tight spot.

The case emphasizes the need for early discussion of authorship responsibilities and credit. All collaborators should understand what they can expect from their efforts. How differently would this case be if Latisha had told Dr. Lange, "Thank you for opening your clinic to me, I'll be sure to acknowledge your contribution when I write or present." Or, if Dr. Jones, Dr. Lange, and Latisha had discussed the contributions that Dr. Lange could make to be a full collaborator and thereby an author on the project.

This case also offers an opportunity to discuss the oral or written authorship policies of the school or program. If only oral tradition guides authorship, faculty and students are encouraged to create a written policy.

Promoting Integrity in the Next Generation of Researchers

AUTHORSHIP

Determining Authorship/Acknowledgment - Case 2

Barbara Chan, an occupational therapy entry-level master's student, was a paid research assistant for Dr. Diane Meyer's study of a new handwriting assessment for grade school students. Barbara assessed 300 sets of first and second grade handwriting samples and entered these scores into a computer database. The study examined the handwriting measure's predictive validity, intra-rater reliability, concurrent validity, and discriminant validity. Dr. Meyer was the first author on the article that reported her findings on the handwriting assessment. Barbara and another student worker were given second and third authorship on the article. Barbara was thrilled to have her name on a publication. Although she understood that the statistical analyses supported the handwriting assessment, she didn't really understand each step in the analyses or the statistics used.

For her required master's scholarly project, Barbara conducted a qualitative study on the ways that transitional support services influenced five women's roles as *mother* in their return from prison to the community.

Student Questions

1. Do you see any problems or issues in the case? What?
2. During an interview for a staff position at a community clinic, the therapist explains that they are especially interested in Barbara because her research experience may help them evaluate outcome measures for their clinic. The therapist asks Barbara to explain the handwriting study in detail during the interview lunch, and is especially interested in why specific statistical analyses were chosen. What should Barbara do? Who is responsible for this dilemma?

Discussion Points

Although well meaning, Dr. Meyer acted irresponsibly when she treated authorship as a gift. She listing listed her students as authors when they had not earned the credit and couldn't shoulder the responsibility that accompanies it. It would have been more appropriate to offer the students additional responsibilities on the project, mentor their learning about the study, and involve them in writing the final article. This would have taken more time from both Dr. Meyers and the students, but it would have secured a reasonable place for them as authors. As it stands, their authorship is a hollow achievement and as the case demonstrates, could actually place the students in an awkward position.

Promoting Integrity in the Next Generation of Researchers

AUTHORSHIP

So You Want to be Sole Author?

Etta Thum is a bright and ambitious entry-level master's occupational therapy student, with prior research experience in her bachelor's field (Biology). Etta's occupational therapy program is part of the School of Allied Health. The school's written policy for master's students states that:

1. Theses or research projects are a collaboration between faculty advisor and student, and therefore joint authorship is anticipated unless there are strong reasons for an alternative. (See item 3);
2. Students should be given first option to transform their project or thesis into publishable form. Students taking that role should be first author, with the advisor taking *anchor* authorship.
3. If a student does **not** work toward publication within one year of defense, the advisor has the right to move the work toward publication. In that case, the advisor may be listed as first author with the student as second author or acknowledgement, depending on the situation.
4. If several students worked on the same project, the students should determine author order with their faculty advisor's assistance.

Etta's study examined how pediatric and general clinics that also serve children use standardized and nonstandardized pediatric pain measures. After many months of work, Etta is finishing the penultimate draft of her thesis. At last week's meeting, Etta and her advisor (Josephine D'Alessandro) discussed Etta's oral defense. At the end of the meeting, Etta asked what she needed to do to publish her thesis as sole author.

Dr. D'Alessandro was surprised by the request and reminded Etta that the school's policy assumed co-authorship or, in cases of student disinterest, sole faculty authorship. Etta argued that she had been an independent student and had done most of the intellectual work on the project as well as gathering and analyzing the data, and writing the thesis. Etta believes that it would be more responsible to thank Dr. D'Alessandro in the acknowledgements.

Over the past week, Etta and Dr. D'Alessandro's discussions have become uncomfortably heated and their relationship is now strained. In an effort to reduce the tension, Etta has explained her position to Dr. D'Alessandro in a letter. Her position is as follows:

- Although Dr. D'Alessandro suggested the original question and the study's design benefited from her advisor's input, Etta could have gotten the ideas and supporting information by reading Dr. D'Alessandro's published work where she recently made similar suggestions.

- Etta agrees that Dr. D'Alessandro “suggested several published models and theories” but asserts that it was she (Etta) who read and considered these models and theories. Etta characterizes her advisor as “serving as a resource – like a librarian”.
- Etta acknowledges that her advisor contacted clinical sites, wrote and submitted all Institutional Review Board (IRB) applications and review reports, advised Etta on her recording system and database, and helped her problem-solve issues about participant recruitment and data analysis. But Etta characterizes this as “technical assistance” not scholarly intellectual additions to the work. “I could have written the IRB application and consulted a statistical hotline if I’d known that it would allow me sole authorship.”
- Etta writes well. Most of Dr. D'Alessandro’s suggestions on the thesis have dealt with organization, professional phrasing, and ideas or resources to enrich the literature review and discussion sections. Etta characterizes these contributions as “editorial, not substantive”.
- Lastly, Etta explains that she did not raise the issue of sole authorship earlier, because the school’s policy does not describe how a student should go about achieving it. Instead, she tried to be as independent as she could.

Etta likes Dr. D'Alessandro, but she believes that “the goal of doing thesis research is for me to develop as an independent thinker, and I have. Therefore, any publication from this work should carry only my name. Beside, I want to become faculty. An independent article will help me toward that goal and will give me good experience to prepare to be faculty.”

Student Questions

1. What do you think of Etta’s reasoning? Why?
2. Neither Etta nor Dr. D'Alessandro discussed authorship early in the process. Each made her own assumptions. Does this affect who should be author?
3. Can Etta change advisors to avoid this problem?
4. What, if anything, should be done about the school’s policy or about Dr. D'Alessandro’s approach to advising?

Discussion Points

If an advisor does his/her job well, students grow during the process and feel that they are coming into independence. It should, therefore, be acknowledged that Etta is honestly trying to apply the rules she has learned, i.e., that authorship demonstrates the history of the intellectual work of a study. However, it appears that she is minimizing Dr. D'Alessandro’s input to her process and product. Dr. D'Alessandro appears to have offered both support and intellectual insights during her weekly meetings with Etta. The advisor is likely to feel hurt or angry at Etta’s characterizations. The situation will be helped by both parties keeping cool.

It may help if Etta and Dr. D'Alessandro review draft copies of Etta's efforts and notes from development meetings. This may help Etta recognize the substantive input that her advisor has given, and its effect on her final product. Because Etta acknowledges Dr. D'Alessandro's input to the question, design, background and interpretation, it seems reasonable according to APA, ICMJE, and AOTA principles to have shared authorship. Etta should also use the experience to learn that when there is a plan to depart from typical behaviors, it is best to negotiate before taking action.

Changing advisors is not an option at this late date. Indeed, even if she had proposed the idea earlier, it may not have been an ethical alternative if Etta wanted to continue with their jointly created research question. If Etta independently derived a question from Dr. D'Alessandro's published works, that question could be "owned" by Etta and a new advisor. But, in this case Dr. D'Alessandro shared the idea with Etta. It is, therefore, not Etta's to bring to a third party.

Promoting Integrity in the Next Generation of Researchers

AUTHORSHIP

Author Order

Valentine Quin, an entry-level master of science student in occupational therapy, studied the short- and long- term effects of a fatigue management program for people with HIV. The study used a single group pre-post design.

Dr. Tim Hafaz had already developed the study question and outcome measures as part of an unsuccessful grant funding submission. Valentine wrote the Institutional Review Board (IRB) application, did additional research on the outcome measures (adding one), and led the first group (n=8) of participants through the six week course. Valentine's statistical analysis on the pre-post study showed that her small sample showed moderately positive effects from the program (i.e., people became perceivably less fatigued), but that these differences did not reach statistical significance. Valentine wrote and defended her report of the scholarly project and graduated.

Aggie Bickford, a second entry-level OT student took-up the project where Valentine left off. Valentine met with Aggie and shared her written resources and personal experiences. Working hard, Aggie was able to recruit and lead four fatigue management groups (n=42), bringing the total sample of study participants to 50. Using the statistical analysis originally planned by Valentine, Aggie's larger sample was able to demonstrate statistical significance and the same moderate positive effect sizes from the intervention. Aggie wrote and defended her report of the scholarly project and graduated from the program. She is now considering returning to college for doctoral work.

Both Valentine and Aggie are working as staff occupational therapists in physical rehabilitation clinics in the state. Both are excited about publishing their results.

Dr. Hafaz heavily edited both reports, but Valentine's is better written than Aggie's. When Dr. Hafaz had a publication meeting with students it was agreed that the published article would use Valentine's literature review with updates from Aggie's report. Both students understand and can explain the studies method, analyses, and findings.

Both Valentine and Aggie believe they deserve first authorship, and have asked that Dr. Hafaz make the final determination. The journal that is targeted for the publication uses the American Psychological Association's style manual, but Dr. Hafaz typically adheres to the biomedical convention whereby final author position (anchor) indicates mentorship. The journal does not permit authors to explain author order in their authors' information section (i.e., they cannot write that they used alphabetical order).

Student Questions

1. Who should be first author? What criteria did you use?

2. Who should be making this authorship decision? Why?
3. What, if anything, could have helped prevent this issue at this late point in the process?

Discussion Points

It is easy to state that authorship order should reflect the history of the intellectual work on the project. But, this case demonstrates the ambiguous issues of balancing different contributions that are similarly important, and the problems that can occur as collaborative research groups change across time. Researchers commonly over-credit recent efforts and under-credit efforts performed months or years ago. This mistake is especially likely if the earlier member left the group. The case demonstrates why there should be open discussion and agreement about authorship and the tasks to be performed for specific author order when a collaborative group changes.

Although both Aggie and Valentine want Dr. Hafaz to decide the issue, his best contribution may be to call a meeting where the full group can discuss and reach a solution. One of the published authorship scales may help all parties come to consensus on author order and help clarify how to weigh different contributions.

Dr. Hafaz, organized and designed most of the study, and it could be argued that he should take first authorship, to conform to the APA style. However, as a junior faculty member, it may be better for Dr. Hafaz to adhere to a single model across advisee situations, especially if he is publishing in both APA and ICMJE journals.

Students' discussion of authorship should consider several factors. It is common for students to assert:

- Valentine as first author because of her major intellectual contributions to early study issues, mentoring Aggie's initial effort, and writing significant portions of the final work.
- Aggie as first author because she gathered the largest portion of the study data and analyzed the final results. Aggie's scholarly findings are also more closely aligned with those that will be contained in the published paper.

If students conclude that the two students contributed equally, alphabetical order is generally recommended, even if it can't be explained in the article itself. An informal option might suffice. For example, Dr. Hafaz could address the point in his letters of recommendation. Along the same resolution, some have suggested that the 2nd author on the article be allowed to take first authorship in an oral or poster presentation at a national venue. It does not fully compensate for first authorship, but does support the contention that both students were equally appropriate for first position.

Authorship and author order reflect the history of a work, so there is one thing that should not be considered in determining author order: Aggie's plan to return to graduate school. Aggie's

future does not increase her contribution to the paper and therefore is not material to author order. Aggie may need first authorship more, but that does not mean that she deserves it more.

Promoting Integrity in the Next Generation of Researchers

PUBLICATION ISSUES

Student Reading

OBJECTIVES

1. Define plagiarism.
2. Describe ways to acknowledge the ideas, the words, and the illustrations of others.
3. Describe ways to avoid plagiarism.
4. Personally commit to being honorable in the use of others' work.
5. Discuss issues related to publications containing case studies.
6. Discuss the irresponsible nature of fragmented and redundant publication.
7. Discuss responsible action when a researcher detects errors before and after publication.

READING

Occupational therapy researchers have a responsibility to share their findings with others, whether the findings are positive or negative and whether the findings support or fail to support a study treatment. Unless a study demonstrates poor science or is associated with misconduct, its findings should not be suppressed or hidden from the appropriate audience. For this reason, researchers retain their right to select the venues for dissemination and to control the time and the type of dissemination (see the student reading on *Conflicts of Interest*). But other problems can arise with dissemination.

Inflating Publications

Publishing research articles helps bring prestige and fame to a researcher. As a result, people may be tempted to divide their research into many small and less consequential publications, rather than publishing fewer, more substantial works. Researchers irresponsibly inflate their dissemination in two common ways:

- **Fragmented publications**, in which data are separated to produce multiple small publications at the cost of coherent and comprehensive analyses
- **Redundant publications**, in which a single set of data and findings is published in more than one article

Fragmented publications are sometimes called *delicatessen* or *salami* publications because the findings are sliced thinly to produce many works. If a study has more than one question, there may be good reasons to divide its data into more than one article. In such a situation, researchers should clearly indicate that each article's data are from a single study. Otherwise, readers may mistakenly assume that the articles represent independent studies, each with its own sample. This inaccurate assumption could inappropriately inflate a single study's impact.

Fragmented publications also undermine holistic understanding and interconnection of findings. By publishing separate articles, researchers isolate findings from one another and weaken the connections across data.

Redundant publications are more obviously problematic. With few exceptions they are considered irresponsible for two major reasons:

1. They are likely to involve fraud. When submitting an article for publication, researchers must affirm that they are not submitting it elsewhere and that the work has not been disseminated. Submitting the same material for review by several journals abuses the trust of the journals and the time and the efforts of the reviewers.
2. Publishing the same work in several venues poses the same problem as fragmented publication: It can imply that there were multiple studies with independent samples, and it therefore irresponsibly inflates a single study's impact. Findings can also be inflated if a pilot study is published and then the pilot participants' data are combined with data from a second sample and published as a *new* sample. To avoid this problem, the articles' *Participants* section should clearly explain the sample. Otherwise, readers are likely to assume that the two publications are independent, and fail to understand that the current study supersedes the pilot.

Professional cultures may differ in their attitude toward fragmented or redundant publications. In collaborative research the partners should clarify each professional's cultural norm and decide how to divide and publish data.

Although most types of redundant publications are considered unethical, some are permitted. Generally, the same data may be presented in different forums. For example, data that were presented orally or as a research poster at a state, national, or international conference may be disseminated in written form as long as the presentation is credited in the written work. This credit is usually given in an author's note. Similarly, a study may be presented at several conferences as long as the conference planners are fully informed of the reprises, and the same title is used across venues. This exception allows work to be widely disseminated, while assuring that conference participants are apprised that a work offered is a repetition.

Journal editors may also allow redundant publication of a study if their journals have totally separate readerships. For example, they may permit translation and republication of an original article in a new language. Such redundant publication assumes that the editors and the publishers of both the original journal and the second journal are aware of the redundancy. Even so, there must be a "first" journal. That is, a researcher may not submit the same work for simultaneous review by more than one journal.

Plagiarism

Plagiarism is the use of another source's ideas, words, drawings, data, figures, findings, or conclusions without accurate attribution to the original source. Plagiarism is such a serious breach of research ethics that the federal Office of Science and Technology Policy (n.d.) groups

it with data fabrication and data falsification as one of three behaviors constituting *research misconduct*.

Misrepresentation of a source is considered plagiarism regardless of the person's intent, the amount of material used, the source of the material, or the presence or absence of a copyright. For example:

Intent: Innocent but sloppy scholarship is plagiarism, although punishment is generally saved for those who overtly try to mislead an audience about the source of important elements.

Amount of material used: Using a single catchphrase, sentence, or paragraph without attribution is plagiarism, although patterns of plagiarism are of the most critical ethical concern.

Source: Using work without proper attribution is plagiarism, whether the original source was oral, printed, or electronic.

Presence or absence of a copyright: Not citing a source is plagiarism, whether the material was taken from a copyrighted source or a noncopyrighted source. Copyright infringement is a legal issue; plagiarism is an ethical issue. Publishing noncopyrighted work as one's own creation may not be illegal, but it is irresponsible.

The American Medical Association (1998) describes four types of plagiarism:

Direct: An author uses work from another source verbatim, without quotation or citation.

Insufficient acknowledgment: An author cites some materials and not others, confusing the source of individual ideas.

Mosaic: An author pieces together ideas and words from multiple sources without separate citations.

Thesaurus (which the AMA refers to as *paraphrase*): An author changes words, but retains the flow and the meaning of the original work.

To be considered a legitimate paraphrase of an original work, a new work should synthesize or summarize, not simply alter the words of the original work. For examples of acceptable and unacceptable paraphrasing, see Table 1. The left column carries original text, taken verbatim from the section on plagiarism in the American Psychological Association (APA) *Publication Manual* (2001). The right column contains two examples of acceptable paraphrasing of the original text. The first is an acceptable paraphrase offered in the APA manual, reproduced in the table verbatim. The middle column contains an example of an unacceptable paraphrase. Some authors call this a *thesaurus paraphrase*. As written, it cannot be properly cited because it is neither verbatim use of another's work nor a synthesis of another's work. In spite of using different words, this example exactly parallels the original text, using the same arguments, rhythms, and flow of ideas.

Table 1 Comparison of two ways to paraphrase

Original Material	Unacceptable Paraphrasing	Acceptable Paraphrasing
<p>“The essence of the scientific method involves observations that can be repeated and verified by others. Hence, psychologists do not make up data or modify their results to support a hypothesis . . . Errors of omission also are prohibited. Psychologists do not omit troublesome observations from their reports so as to present a more convincing story.</p> <p>“Careful preparation of manuscripts for publication is essential, but errors can still occur. It is the author’s responsibility to make such errors public if they are discovered after publication . . . The first step is to inform the editor and the publisher so that a correction notice can be published . . . The goal of such a correction is to correct the knowledge base so that the error is brought to the attention of future users of the information. Corrections published in APA journals are connected with the original article in the PsycARTICLES database so that the correction will be retrieved whenever the original article is retrieved.” (APA, 2001, pp. 348–349)</p>	<p>The core of the scientific approach involves experiences that can be replicated and tested by others (APA, 2001). Therefore, psychologists do not fabricate data or change their results to support a theory. They are also prohibited from omitting information. Psychologists do not leave out problematic observations from their work even if doing so makes a more convincing argument.</p> <p>Meticulous preparation of manuscripts for publication is crucial, but mistakes can still happen (APA, 2001). The author must make such errors public if the errors are discovered after the article has been published. To do this, the author must first inform the editor and the publisher so that a correction notice, or <i>erratum</i>, can be published. The objective of such an erratum is to rectify the knowledge base so that the error is caught by future users of the information. Corrections published in journals that use APA style are linked with the original work in the PsycARTICLES computer database so that the correction will be included whenever the original article is accessed.</p>	<p>As stated in the fifth edition of the <i>Publication Manual of the American Psychological Association</i>, the ethical principles of scientific publication are designed to ensure the integrity of scientific knowledge and to protect the intellectual property rights of others. As the <i>Publication Manual</i> explains, authors are expected to correct the record if they discover errors in their publications; they are also expected to give credit to others for their prior work when it is quoted or paraphrased.*</p> <p>OR</p> <p>According to the <i>Publication Manual of the American Psychological Association</i> (APA, 2001), publishing fabricated data or falsified results undermines the credibility of scientific research. Such active misrepresentation is considered a sin of commission. Equally reprehensible is its companion, the sin of omission, in which inconvenient or contradictory data are omitted so that a researcher’s hypotheses appear to be better supported.</p> <p>These are different from the honest errors that can occur during publication. Both falsified results and intentionally omitted data are intended to mislead, whereas errors are inadvertent and void of such intent. The <i>APA Publication Manual</i> (2001) demands that errors caught after publication be acknowledged and corrected in the same forums that contain the original work. This permits people using those forums weeks, months, or years later to avoid perpetuating the original mistake. The author informs the editor and publisher that he or she has discovered an error, and a correction of the error (i.e., an erratum) is published in the next available journal and linked to the original work in all databases containing the original (APA, 2001). Errors that are caught before publication should be corrected, averting any need for such actions.</p>
<p><i>Note:</i> From <i>Responsible Conduct of Research, Part I</i> [Curriculum], by E. B. Stern (2000), Minneapolis: University of Minnesota. Adapted with permission. *This paragraph is a verbatim example of a paraphrase from the <i>APA Publication Manual</i> (2001). It is meant to demonstrate a paraphrase. Therefore, although it is verbatim, it has not been placed in quotation marks.</p>		

People often ask if they may plagiarize their own previously published works. In general, *self-plagiarism* is not permitted. This is especially so if other authors collaborated on the original work and not all of them are part of the current work. If a sole author wishes to reuse intellectually important materials such as literature review, tables, or figures the issues are likely to be ones of copyright, misrepresentation of context, and redundant publication.

There are a few exceptions to the rule against self-plagiarism. Theses and dissertations need not be quoted when the author reworks them into articles or book chapters, because the author will include an *author's note* that the current article is based on the previous work. In addition, editors generally accept that the more formulaic portions of an article, such as the description of methods, may be nearly identical to past descriptions without requiring citation.

Preventing Plagiarism

Many Web sites suggest steps to help prevent unintended plagiarism. Four especially helpful documents available online are Indiana University (2004), Procter (2005), Online Writing Lab (2004), and Trivedi and Williams (2003). Their recommendations include:

Take careful notes. Copy all bibliographic information on note cards or sheets, and always use quotation marks when recording verbatim statements.

Use several sources for information. Reading several sources helps you recognize that there are many ways to say something. It makes plagiarism less likely.

Write a first draft without notes. Writing from memory helps avoid undue reliance on the format and the flow of another person's ideas. Put placeholders in sections where citations need to be inserted or details are needed from other works.

Trust your own work. When you believe in yourself, you are less likely to substitute another's work or ideas for your own creative effort.

Know the style required by the target journal or conference, and use reference software. Knowing the style and using reference software allow you to cite as you write, and make it less likely that you will leave something uncited by mistake.

Publication Issues with Case Studies

Case studies pose special challenges for responsible researchers. A case study describes "case material obtained while working with an individual or organization to illustrate a problem, to indicate a means for solving a problem, or to shed light on needed research or theoretical matters" (APA, 2001, pp. 8–9). Because case studies intimately focus on specific individuals or organizations, a reader may be able to identify the individual or

the organization in spite of its not being explicitly named in the work. Therefore, authors must balance confidentiality against detail when writing case studies.

The APA and the AMA agree that it is irresponsible to disseminate case study data that allow an individual or an organization to be identified without the individual's or organization's express permission. But these two respected professional organizations recommend different ways to handle this problem. The APA (2001) advises that "neither the [participant] nor those who know the [participant should] be . . . identifiable" (p. 9). One method of achieving this result is to strip the case study of participant identifiers. Another is to disguise or alter elements of the case. If a researcher chooses the latter method, the APA counsels the researcher to inform the article's readers that characteristics were altered to ensure confidentiality.

The AMA (1998) endorses only one option—that is, gaining permission from the participant to disseminate the potentially identifying elements. The association argues that omitting participant data could lead to inaccurate conclusions when other authors use the case study in their own research, and that changing even small details encourages data falsification. The AMA gives as the example that "changing the city in which the patient lived may seem innocuous, until another investigator subsequently cites the case report and the erroneous city in an epidemiologic analysis of locations of disease outbreaks" (p. 141).

Often, case studies evolve from a practice context, where no formal permission was granted for dissemination, or from a group study, in which participants were explicitly promised that all data would be presented in the aggregate. Before writing a case study, a researcher would be wise to gain explicit consent from the person or organization intended to be the focus of the study.

Handling Errors

Researchers are only human, and humans make mistakes. A responsible researcher corrects his or her errors as soon as they are discovered, regardless of the embarrassment that may accompany correction. Magnus and Kalichman (2002) recommend that as a first step, all authors of a work be informed that there is an error. Actions after that step depend on how large the error is and whether it was discovered before or after publication.

If an author detects an error before publication, he or she should inform the editor of the journal and withdraw the work in order to correct the error. If an author detects an error after publication, he or she should ask the editor to print either a *correction* or a *retraction* in the next available issue of the journal.

The choice of a correction or a retraction depends on the importance of the error. The AMA (1998) recommends that a minor error be corrected by describing the error and its correction in a letter to the editor. Major errors that undermine part of the study's findings should be described and corrected in a formally published error statement, called

an *erratum*. A large error that undermines the research as a whole requires a *retraction*—that is, a published statement that the work is invalid and is being retracted. In each case the correction or the retraction should be listed in the journal's table of contents, cited in any computerized indexes, and appended to the original article in all further productions such as reprints or online archives (AMA, 1998). Some on-line journals and organizations remove retracted works, eliminating electronic access to the erroneous information, but also eliminating all record of the original publication. It is unknown how this action will influence efforts to learn from research errors.

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Promoting Integrity in the Next Generation of Researchers

PUBLICATION ISSUES

A Quick Publication

Dr. Claire Blaufarb is a professor in occupational therapy. Last week, she was surprised to open *The National Therapist**, a weekly magazine, and find herself listed as the co-author of an article with Olivia Eggert. Olivia was Dr. Blaufarb's advisee and defended her thesis nine months ago. At that time Dr. Blaufarb encouraged Olivia to publish the work in *AJOT* or another peer-reviewed journal. They agreed that Olivia would re-write her thesis, and send the manuscript of the article to Dr. Blaufarb for editing. It was also agreed that Olivia would be first author and that Dr. Blaufarb would be second author. Since that discussion, Dr. Blaufarb has heard nothing from Olivia.

Dr. Blaufarb is upset for several reasons. First, *The National Therapist* is not peer-reviewed and therefore the study will not have the broad dissemination that the work deserves. Second, Dr. Blaufarb had wanted to update the literature review (the published article used only the literature included in Olivia's thesis). Third, Olivia's *Discussion* and *Conclusion* sections are overconfident in some assertions about patient care.

While considering the problem, Dr. Blaufarb receives a telephone call from Dr. Shira, a prominent researcher in the field. In the article's *Acknowledgements* section Olivia thanked Dr. Shira for her "help in the study". Dr. Shira had sent Olivia a brief email recommending some published resources and now feels that her name has been inappropriately linked to a work that she doesn't endorse.

Both Dr. Shira and Dr. Blaufarb believe that something needs to be done to correct the issues outlined above.

Dr. Blaufarb emails Olivia asking for a telephone call to discuss the publication. In her response, Olivia writes, "I hope I didn't do anything wrong! You told us that peer-reviewed journals usually take months to get studies into print. I thought that publishing in *The National Therapist* would get our findings out into practice, and then we could take our time publishing the formal article in a peer-reviewed journal. I know how busy you are, so I thought I'd save your time and input for the *real* article."

Student Questions

1. How would you define the issues facing Dr. Blaufarb, Dr. Shira, Olivia, and *The National Therapist*? Do you think that they are minor or substantive? Why?
2. Does publishing the study in the weekly magazine affect future publication in a more rigorous journal?

* *The National Therapist* is a fabricated title. No such magazine or journal exists.

3. Can anything be done about the overstatements made in the piece? Would statistical errors in the article be addressed in some way?
4. What safeguards could have prevented this situation?

Discussion Points

Before a work is published, all authors should have read and approved it. In her rush to publish, Olivia failed to involve her co-author Dr. Blaufarb. If we assume that the published article describes the study fully, that is, includes methodology, results, and discussion – a further publication of that material could be considered redundant, and might be considered inappropriate for publication in a peer reviewed journal. Thus, even though it was only published in a weekly magazine, the work may be considered disseminated by editors of peer-reviewed journals. If Olivia had consulted with Dr. Blaufarb, her advisor would probably have discussed the benefits of peer review (i.e., a chance to improve the work based on peer input) and the benefits of publication in a peer-reviewed journal. Dr. Blaufarb might have suggested that they present the research at an appropriate conference while they worked toward peer-review publication.

In addition to their own discussion, Olivia and Dr. Blaufarb should contact the editor of *The National Therapist* and explain that they would like to correct the article's errors. These corrections can clarify the overstatements in the Discussion section and address Dr. Shira's concern about her acknowledgement. The corrections could take the form of a Letter to the Editor or a formal Erratum statement. The problem with the *Acknowledgement* section could be addressed by republishing that section and specifically thanking Dr. Shira for recommending resources, or by publishing an error statement indicating that use of Dr. Shira's name did not imply endorsement of the study. Dr. Shira's preference should be considered.

This case demonstrates what can happen when collaborators fail to maintain open and consistent communication that keeps each other aware of efforts and changes in plans. It also demonstrates that it may be impossible to fully correct errors once they are in print. Even if a letter or error statement is published there are many people who will only read, and be influenced by, the original article.

Promoting Integrity in the Next Generation of Researchers

PUBLICATION ISSUES

Multiple Publications

Teresa Garcia Ramirez is an occupational therapist who recently completed an advanced master's degree. Teresa's research examined the effects of an 8-week program that presented avocational opportunities, counseling, and leisure training to persons being seen as outpatients for amyotrophic lateral sclerosis. The study's outcome measures included the types and levels of avocational occupations, depression, health related quality of life, and community integration. The project used a two group, randomized, controlled design with one group of outpatients receiving the program, and the other group receiving the same amount of time in a regular support group. Teresa gathered data before the program (baseline), at the end of the program (post), and one month after the program ended (follow-up), and at corresponding times for the control group. The groups were not significantly different in their demographics or in their outcome measures at baseline.

Teresa's advisor believes that Teresa was especially independent in her research, and has indicated that she would like to be acknowledged rather than publish as co-author with Teresa. Teresa has been offered a teaching position, and is committed to publishing her research. She uses the break between her student life and her new faculty job to write and submit the following articles for publication:

1. An article for an Internet-based psychology journal describing the intervention in detail and reporting on the changes in depression of the treated group from baseline to post.
2. An article for the *Journal of Rehabilitation Research* comparing the levels of community integration achieved at the end of the intervention (post), by those who attended the group program and those who received the control experience.
3. An article for the *American Journal of Occupational Therapy* comparing the control and treatment groups' follow-up outcomes on depression, level of avocational activity, and level of community integration.
4. An article for a nonrefereed nursing journal advocating the importance of avocation in community integration, linking it to theory, and describing the program in detail.
5. An article for *Archives of Physical Medicine* briefly explaining the theoretical basis of the treatment and the program itself, and reporting comprehensively on all of the outcome measures.

Teresa is very excited. She believes that these publications will ensure that psychiatrists, nurses, psychologists, and therapists will all have the opportunity to read her work and to understand the important effects of this occupational therapy program.

Student Questions

1. Is there any problem with the way that Teresa has chosen to disseminate her research?
2. Would the problem be resolved if each article reported on a different outcome?

Discussion Points

There are two problems with Teresa's approach. First, she is reporting her findings redundantly. This would be permissible if each editor understood and accepted the redundancy, and if each article clearly indicated the redundancy to its readers. It is unlikely that this is the case.

If all of Teresa's submitted publications are accepted, a person reading several of them could mistakenly assume that she had conducted several studies on the effects of the same program; with at least one using a single group design (pre-post) examining depression, and two using randomized controlled designs. This could lead to overweighing the published evidence.*

Taking the case a step further, what if Teresa had **not** overlapped findings, and had instead published each outcome separately in its own journal? We can all sympathize with Teresa's goal of broad impact, but a *salami* approach is generally permitted only if a study's data answer independent and separate questions or if the complexity of theory or statistical analyses requires separate publication of each outcome. If Teresa's theoretical model is built on relationships across her outcomes, then separate publications fail to accurately reflect the study's theoretical and scientific basis. In short, separate publications will pad her curriculum vitae, but they will not take full advantage of the richness of the data. If there are relationships across findings that are critical to fully understand the study, those relationships will be lost when the findings are dispersed across journals.

As an aside, if Teresa redundantly uses portions of her multiple articles' literature reviews, figures or tables, or discussion she will also have committed plagiarism. While it is generally acceptable to use verbatim elements from one's thesis or dissertation, it is not acceptable to do so from a published work.

Teresa's multiple use is also likely to violate copyright (the legal transfer of ownership rights to the journals that published the other articles), since most journals require that copyright for all figures, tables, and text be transferred to the journal.

* Students who are performing a systematic literature review should take this as an object lesson to compare participant characteristics if the same author has multiple articles with eerily similar designs, purpose, or participant characteristics.

Promoting Integrity in the Next Generation of Researchers

PUBLICATION ISSUES

Group Work

Margaret Singer and Kerri Scopes, two entry-level occupational therapy students are working together on their master's research proposal. In their curriculum, students work together on a project, write a single paper, and defend separately. The two students plan to study the short term effects of a task-oriented intervention on bilateral upper extremity cooking skills in patients who are 12-months post-stroke. The proposal is written as an assignment in their major research class, and is meant to be a *team effort*. The syllabus states that team members will share the paper's grade equally.

Margaret and Kerri are both strong students, and both participate fully in developing the methodology of their proposed research. In addition, the two search the literature together, and find, copy, and outline similar numbers of pertinent journal articles for their literature review. Rather than write the assigned work as a pair, the students divide the responsibilities. Kerri writes the literature review and Margaret writes the rest of the proposal (i.e., significance, method, analyses, and reference sections). Margaret and Kerri then merge the sections and edit the final version together.

When the instructor reads the proposal she notices that the students approached the literature review as a series of short summaries of studies, rather than synthesizing the information for the assignment. She compares a few of the original articles to the students' literature review and realizes that several paragraphs are non-cited verbatim excerpts from the articles' abstracts, rather than the paraphrases that the works deserve.

The instructor is concerned about the integrity of the students' work and a search of the Internet finds that 60% of the students' *table of evidence* (i.e. the table that summarizes the reviewed studies) comes from a systematic literature review available on the Web. There are no citations for this table in the literature review.

The instructor is concerned about the plagiarism that she has exposed, but she is also concerned that the students do not appear to know or understand the literature on their topic.

Student Questions

1. Who is responsible for the plagiarism in the literature review? Why?
2. What do you think will happen to these two students?

Discussion Points

Whereas Kerri committed the research misconduct, the responsibility for it is shared by Margaret. She abdicated her responsibility by acting as only an editor for Kerri's portion, rather than as a co-creator of the work. Whether each would receive similar discipline depends on several factors not specified in the case, including past history and current behavior.

Promoting Integrity in the Next Generation of Researchers

PUBLICATION ISSUES

A Literature Review

As part of her dissertation work, Cathy Schmidt, OTR/L recently conducted a systematic literature review examining the effectiveness of a popular pediatric intervention. She later presented her findings to a state parents' conference. After a reporter heard her presentation and interviewed her, her findings were also reported by the local television news and in her city's newspaper.

Recently, she submitted her literature review to a peer-reviewed journal. The article was blind reviewed by two researchers. One enthusiastically recommended publication with minor editorial changes. The other reviewer expressed concern about Cathy's data. This second reviewer looked up several of the research articles that Cathy used in her review and found that there were several instances where Cathy confused the data. The reviewer wrote, "The author reports a negative effect (i.e., one where treatment is less effective than control) for several of the studies. When I double checked these, I find that their results are positive. I think that the author has made several serious errors in this review!"

Cathy checks her data and finds that the reviewer is right – that her paper's results are incorrect. In fact, she has so many serious errors that her overall interpretation and recommendations are wrong.

Student Questions

1. What should Cathy do about this major error in her dissertation?
2. What should Cathy do about her past presentation to the parent association? About her past newspaper and television coverage? About her formal paper that has not been published, yet?

Discussion Points

This case is every researcher's nightmare. Some students may argue that it is unrealistic, but the case is all too true. Indeed, it is based on a systematic review performed as part of the Cochrane Collaboration, the preeminent systematic literature review group in medicine (Rada, 2005). In the original case, a group of distinguished scientists published a review in the Cochrane Library (an electronically available archive of systematic reviews) and popularized the findings to the public through press releases. When two readers reported that the findings were invalid, the Cochrane Library retracted the document, an act that the public media largely ignored. The case demonstrates how enduring flawed science can be once publicized.

The problem of inaccurate analysis or flawed results is not one exclusively found in literature review. Parallel errors can be found in both laboratory and clinical research. There are grossly erroneous works published in nearly all professional literature, including occupational therapy research.

It is likely that students will suggest that Cathy ask the newspapers and TV to provide a retraction. Absolutely! But the actual historical case shows that it is difficult to get retractions from both professional journals (Friedman, 1990) and media (Rada, 2005). The student discussion should make clear that it is the author's responsibility to ensure that the population that has been misinformed (lay and professional), is informed of the retraction, and that this may take more energy and time than one might expect. In Cathy's case, she should inform her dissertation advisor, and will want to retract the study from dissertation abstracts and either add a statement to the one on file at her university's library or have it removed from the shelves. In some way, an added statement may be a better historic marker, since the reason for removal could be lost through the ages, and its absence misattributed to theft. Cathy also should actively pursue an errata listed in the newspaper and either have that errata filed with the story in any archive or have the study removed from any archive. The case offers a clear example of how print endures whereas electronic format can be erased.

Cathy may still want to pursue publication of her paper, but should do so only after collaborating with someone experienced in systematic reviews, who is willing to not only read the paper but to examine the sources and the methodology.

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Promoting Integrity in the Next Generation of Researchers

MENTORSHIP

Student Reading

OBJECTIVES

1. Define *mentor*.
2. Describe the roles and the responsibilities of a mentor and a person being mentored.
3. Feel empowered to prevent or address mentoring issues.

READING

A *mentor* is “a trusted counselor or teacher, especially in occupational settings” (*American Heritage Dictionary of the English Language*, 1992, p. 1128). Less formally, a mentor has been defined as “someone who will not rest until you have succeeded” (source unknown).

The person who is being mentored is commonly referred to as a *trainee* or a *protégé*, although the former term emphasizes a technical relationship and the latter denotes an almost pet-like dependence that is not typically found in professional situations. The term *mentee* is not accepted in common use. This work uses *trainee* and *student* interchangeably to indicate persons being mentored.

Mentors are often characterized as a mixture of teacher, advisor, role model, guide, and cheerleader. A mentor tries to improve a trainee’s independence and ability to act on his or her “own values, goals, and experience” (Magnus & Kalichman, 2002). Researchers who are inept in dealing with power and control are poorly suited to a mentor role.

Although mentors are typically older than their trainees, peers with greater experience or keener insight sometimes serve as mentors to their peers or even to their elders. Indeed, the only statement one can always make about mentoring is that it is “a relationship between someone with potential and someone with expertise” (source unknown).

Research mentors act as role models, providing good examples, serving as sounding boards, assisting in problem solving, offering advice and encouragement, and providing criticism and editorial advice to the student being mentored. A research mentor’s roles may include not only intellectual development of the trainee but also professional, political, ethical, financial, and social development.

Commitment to Mentoring

Both a mentor and a trainee commit themselves to extra work. A mentor provides additional learning and networking opportunities, and a trainee spends additional time and energy participating in these opportunities. For example, a mentor might suggest that a trainee coauthor and co-present a paper at a conference. A trainee is unlikely to benefit

from mentorship if he or she thinks of the experience as an additional demand rather than a unique opportunity. It is commonly thought that students who do not sincerely want to make the commitment of additional time are less likely to have successful mentoring experiences.

Prospective professionals generally need several mentors to guide, support, and encourage different areas of their professional growth. For example, a faculty member who serves as a research mentor may be less appropriate as a mentor of clinical or supervisory skills. A mentor who guides a student through a political issue may not be appropriate to advise and model excellence in teaching or in research. A faculty member who serves as a student's research advisor commonly also serves as the student's mentor, but not all advisors want to or should be mentors.

Unlike advising, in which established rules may exist for the pairing, mentorship may be initiated by the student seeking it or offered by the prospective mentor. To help make mentorship work, Shamoo and Resnik (2003) suggest the following:

1. Students seeking mentorship should get to know the person who might be their mentor before making a formal request that the person serve in that capacity. The insights during this informal time allow both parties to understand the personalities at play. Most frequently, problems with mentorship can be attributed to misunderstandings or to personality misfits between the parties. Before establishing the mentoring relationship, thinking about the "fit" between student and potential mentor is helpful.
2. As noted earlier, successful mentorship requires a commitment of time and energy by both parties. A trainee can expect to have greater access to his or her mentor than other students have, and a mentor can expect a trainee to put forth a greater-than-usual effort toward professional growth.
3. Although mentorship may come in gradual steps, establishing a formal agreement (i.e., a formal offer or a formal request) at some point is wise. Such an agreement rarely entails a written contract, but it should be an explicit understanding regarding the following:
 - The area of growth in which the student is seeking mentorship.
 - The expectations of both parties regarding the scheduling, the types, the frequency, and the format of mentoring contacts.
 - The style and the boundaries of the relationship. This can prevent a multitude of problems. Magnus and Kalichman (2002) point out that "some trainees see frequent and probing discussion with a mentor as invasive micromanaging, while other trainees thrive on frequent feedback."
 - Data ownership, intellectual property, and authorship issues.

Conflicting Roles

Boundaries are especially problematic when a mentor has multiple roles as teacher, advisor, employer, counselor, and friend (King, 2003). As long as a mentor bases his or her role on what is best for the trainee, the mentor can control these multiple roles. If a mentor's needs compete with a trainee's, the conflict of interest can become serious. For example, a trainee has a right to expect different actions from a mentor than from an employer or a friend, but if a mentor is playing all three roles, special vigilance may be needed to ensure that the roles coordinate without blurring.

Balancing loyalty, friendship, and indebtedness can complicate a trainee's decisions (Shamoo & Resnik, 2003), as illustrated by the following scenarios:

- A mentor unintentionally creates a personal crisis by giving the trainee too much work. The mentor may sincerely want to improve the trainee's skills and abilities, but may cause problems nonetheless.
- A trainee who is employed by his mentor feels unable to quit his job and take a better one, because of the link to the mentor.
- A trainee hesitates to change her research topic because she feels that doing so would betray the mentor's investment.

In each case, two strategies can help ease the problems. First, both the trainee and the mentor should maintain open communication. If they do, each can approach a problem as an issue to be resolved, not a reason to abandon the connection. The mentor should remember that his or her role is that of *advisor*, not *decider*. Second, both the trainee and the mentor should remember that mentoring is primarily a gift to the trainee. There is nothing disrespectful about not wanting a gift. Mentors who see mentorship as a way to benefit from a trainee's efforts are approaching the association as if it were employment, with the student being *paid* through proximity to the mentor. Any reciprocal benefit to the mentor should be considered incidental and not drive the relationship.

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Promoting Integrity in the Next Generation of Researchers

MENTORSHIP

Choosing an Advisor

Janet Kearns, MS, OTR/L, an occupational therapist with 10-years of experience in orthotics and prosthetics chose the Prentice University doctoral (PhD) program because of the reputation and research of Dr. David Janus, an occupational therapist and bioengineer. When Janet was starting her third year in the program, Prentice University offered a one-time early retirement option that Dr. Janus accepted. He announced that he would be retiring at the end of the spring semester.

Janet and Dr. Janus had been refining ideas for her dissertation related to a functional outcomes tool for persons with upper extremity amputations. Three faculty members had agreed to serve on Janet's dissertation committee: Dr. Beverly Martin, Dr. Ty Trent, and Dr. O. Smith. Dr. Janus suggested that Janet choose Dr. Martin as her new dissertation advisor, because of Dr. Martin's expertise in outcomes tool development -- and because Janet had already consulted her on several occasions. Janet approached Dr. Martin, who agreed to become her dissertation advisor. They completed the necessary paperwork, and Janet took the forms to Dr. Fine, the department chairperson, for his signature.

Dr. Fine tells Janet that he would be a better choice as her dissertation advisor because not only does he use a below-the-elbow prosthesis, but also he has a patent on an upper-extremity prosthetic device. Dr. Fine informs Janet that he had 3 years of experience in clinical prosthetics before beginning his academic career, and would welcome a chance to update his knowledge on the population. In addition, Dr. Fine notes that his widespread academic network will help Janet when she looks for an academic job.

Interpreting Janet's silence as agreement, Dr. Fine alters the forms to list himself as advisor, and adds a new faculty member, Dr. Newell, to replace Dr. Janus on the committee. Dr. Martin and Janet had planned to ask Dr. Digit, a biostatistician with knowledge of tool development.

Student Questions

1. How can Janet respond to Dr. Fine's actions? What are the positive and negative outcomes of these responses?
2. What characteristics should a student consider when selecting an advisor? How are these characteristics demonstrated in this case?
3. What were Dr. Janus' responsibilities to Janet and did he meet these?

Discussion Points

It is unfortunate that Dr. Janus is not able to complete his role as Janet's advisor, but such changes are not unusual. Among other things, advising relationships can be ended by retirement (as in this case), a professor changing jobs, disagreement between advisor and advisee, or illness or death. Dr. Janus met his responsibilities by ensuring options that will allow Janet to continue her research, and by suggesting and helping her contact potential replacement mentors.

A student is wise to discuss the possibility of advisement with several faculty members before making a decision but, ultimately, a student's choice of advisor is between the student and the advisor. Janet appears to have made well-reasoned and reasonable choices when choosing first Dr. Janus and then Dr. Martin as a replacement. Dr. Fine has taken over these choices, and while we may not approve of his action, it is Janet who has abdicated her responsibility. She came with a set plan, and wanted only Dr. Fine's signature. If she allows Dr. Fine to alter her plan for the weak reasons given, she is likely to end with a poorly composed committee and a poorly mentored project.

In the best world, Janet would return to Dr. Fine and respectfully indicate that she'd thought through his generous offer to serve as her advisor, but chose to have Dr. Martin take that role. She might point to her established relationship with Dr. Martin and their early work on the project to help Dr. Fine understand that the decision is based on on-going advisement. Janet should arrive at Dr. Fine's office with the new paperwork, completed as she wishes and leave with it signed. Any discomfort she experiences in having to assert her request will be more than balanced by the satisfaction of having the committee that she wants.

Advisors, like mentors, should be selected based on:

- Their research interests, which should parallel those of the advisee,
- The critical intellectual role that they can play on advising
- Their reputation as scientists and mentors
- The match between their personality and that of the advisee
- And, the opportunities they may offer for professional growth.

By these measures, Dr. Martin is the clear preference over Dr. Fine in all but the final element. It may be reasonable for Dr. Fine to serve as the fourth member of the committee instead of Dr. Newell or Dr. Digit (if Dr. Martin agrees), but that should be a decision made by Janet and Dr. Martin, before Janet returns to Dr. Fine's office.

If Dr. Fine insists that he should be Janet's new advisor, Janet may have to decide between acquiescing or taking a stronger position and seeking mediation. She could ask Dr. Janus or Dr. Martin to intervene on her behalf, but this would be less preferable and more likely to have political repercussions than if Janet asserted her own original request for Dr. Martin and sought mediation by an independent individual such as an ombudsman.

Promoting Integrity in the Next Generation of Researchers

MENTORSHIP

Advisor Issues (continued from “Choosing an Advisor”)

Janet chose to accept Dr. Fine as her advisor and is moving on with her dissertation plans. Before she can conduct her dissertation research, Janet’s committee must approve her proposal.

For several months Janet tried to make an appointment with Dr. Fine to review her dissertation proposal. She sent a print and e-mail version to him and got no response. His secretary scheduled appointments for Janet, but Dr. Fine did not keep them. Finally, Janet asked for Dr. Martin’s help. Dr. Martin called Dr. Fine and asked if he was aware of Janet’s efforts to meet. Dr. Fine replied that he was aware of the situation but that he had taken on additional teaching and service responsibilities that left him no “free time”. Dr. Martin informed Dr. Fine that she was working closely with Janet to develop her dissertation’s outcome measures, and that she thought that Janet was ready to have her committee meeting. Based on Dr. Martin’s suggestion, Dr. Fine tells Janet to schedule a dissertation proposal meeting.

At the dissertation proposal meeting, Dr. Fine informs the committee that because Janet’s dissertation focuses on outcome tool development, Dr. Martin will be working closely with Janet, but keeping him informed of progress. Believing that Dr. Fine would not follow through with Janet, Dr. Martin mentors Janet through the dissertation process and keeps Dr. Fine informed via e-mails. Dr. Fine rarely responds to these e-mails with more than “Great. Thanks”. After graduation, Dr. Fine writes a glowing but generic, letter of reference for Janet as she looks for an academic position. Dr. Martin writes a more specific and equally glowing letter. Janet is hired as a faculty member at another research university.

Student Questions

1. What were Dr. Fine’s responsibilities to Janet as his doctoral advisee? Did he fulfill these?
2. What do you think of Dr. Martin’s actions?
3. Who would have been accountable if Janet had been unsuccessful in her dissertation?
4. What could Janet have done to resolve the problem without relying on Dr. Martin’s unofficial advisement?

Discussion Points

It is not unusual for an advisee to believe that his/her advisor is not meeting his/her expectations. In this case the issue is meeting schedules, but it could just as easily have been timely submission of drafts, types of feedback, independent action, or turn around of review. Sometimes an advisee has inappropriate expectations, sometimes an advisor is not performing appropriately. In either case, the first step is for the advisee and advisor to meet and determine a way to resolve the issue.

Wise advisors and advisees establish ground rules at the start of their relationship. For example, the two will want to establish whether papers will be returned within 2 weeks or 2 days of receipt, and clearly define scheduled meetings. In addition, an advisor and advisee may want to establish whether the advisor is going to act as a line by line editor of written work or simply provide "big picture" input. In addition,

In spite of her best efforts, Janet was unable to arrange a meeting with Dr. Fine, so Janet went to Dr. Martin. There may have been better choices. If the program has a Director of Graduate Studies (DGS) he or she might be better able to outline the problem and seek a more formal resolution to the problem. In the case Dr. Martin becomes the unofficial advisor. This opens both Dr. Martin and Janet to problems if Janet's work had not been successful or if Dr. Fine had asserted his formal authority at the end of the process. It would have been better to have the DGS negotiate with Dr. Fine, who might recognize that he is unable to truly provide the time needed for advisement, and install Dr. Martin as Janet's formal advisor. That would create an accurate historical record of work, and would give Dr. Martin the formal responsibility and credit for the advisement that she performs.

Janet found a way around the system and it appears to have turned out alright. But, students should be encouraged to consider the less positive possibilities that could have occurred.

Promoting Integrity in the Next Generation of Researchers

MENTORSHIP

Separating from Advisement

Doris Collins completed a baccalaureate degree in occupational therapy. After working three months as an occupational therapist, she received a full scholarship to attend Longfellow University's post-professional occupational therapy master's program. Her master's advisor, Dr. Billie Williams was impressed with Doris' work and her interest in pursuing a research career. She recruited Doris into the doctoral (PhD) program in Allied Health Sciences. Doris was offered a full scholarship with a stipend, provided that her dissertation topic focused on the grant that was supporting her: *Trajectory of Stroke Outcomes in Older Adults*.

Doris proved to be a diligent and focused researcher on the grant project, and did exceptionally well in her academic coursework. Dr. Williams included Doris in presentations of the grant's preliminary data, guided and encouraged Doris to present at scientific meetings, and arranged for her to co-author a book chapter that had originally been contracted solely to Dr. Williams. Dr. Williams mentored Doris, was also her dissertation advisor, and edited a manuscript from Doris' first chapter that was published in a peer-reviewed journal before her final dissertation chapters had been written. Dr. Williams declined Doris' offer of co-authorship, to allow the article to be considered for "Best 1st Time Author" award given by the publishing journal each year. The article received the award which provided Doris with a \$500 prize. .

Doris was a very active student. She organized student forums on several topics and served as President of the Allied Health Sciences Student Association. As Doris' external activities increased, other research staff informed Dr. Williams that Doris was often late to participants' appointments and that her data entry was backlogged for several months. Dr. Williams realized that that Doris' research paperwork was not making timely progress.

Dr. Williams counseled Doris that her external interests were interfering with her research work and progress on her dissertation. Doris assured Dr. Williams that her primary goal was research and that she would cut-back on other activities and refocus on that effort.

About the same time as their meeting, a postdoctoral fellowship became available at Prestigious University, and Doris asked that Dr. Williams write a supportive letter. Assured of Doris' commitment to her research, Dr. Williams wrote a glowing letter, stating in part that "Doris is committed to finishing her dissertation requirements in time to accept this position in September". Within two weeks, the postdoctoral mentor at Prestigious University called Dr. Williams to tell him that they were going to offer Doris the postdoctoral fellowship. During the conversation, the mentor from Prestigious University emphasized that Doris would have to have completed **all** of her academic

requirements **and** have defended her dissertation prior to September. Otherwise they would not allow her to begin the postdoctoral fellowship and would rescind their offer. A written offer of the postdoctoral fellowship was sent to Doris, including the stipulations. Doris was elated at having received the honor of this fellowship, and looked forward to the way that it would help establish her professional career.

In spite of her assurances to Dr. Williams, Doris continued her outside activities and cancelled a string of appointments with study participants so that she could have what she described as a “much needed vacation”. Doris did not inform Dr. Williams of the cancellations nor did she seek her approval for the time off. As of July 1, Dr. Williams had not received a final copy of the dissertation, and Doris began working at home rather than coming to the office. On August 10 Doris brought Dr. Williams a copy of the dissertation and told her that she had distributed copies to her other committee members and had scheduled her defense. She told Dr. Williams that the other committee members were all willing to provide a short turnaround so that Doris could begin her postdoctoral fellowship at Prestigious University. Although they felt manipulated into an unnecessarily brief timeline, Dr. Williams and the committee members reviewed and gave input on the dissertation in record time. Doris defended her dissertation successfully (although her performance was somewhat lackluster). She was given a short list of stipulated changes needed before Dr. Williams would sign-off on the document.

A few days after her defense, Dr. Williams was told by one of the other doctoral students that Doris would be out of town for several weeks, celebrating her graduation in Switzerland with friends. On September 15 Dr. Williams receives a voice message from Prestigious University saying that Doris had requested a late start date for her fellowship because her committee had “delayed her with slow editing of the final draft of the dissertation”. The caller asks when Dr. Williams anticipates that he will formally issue a dissertation grade.

Student Questions

1. What went wrong in this case? What could Dr. Williams have been done to change the process and outcome of this case? Why didn't she take those actions?
2. Does Dr. Williams have an ethical obligation to address her concerns with Doris? Does she have an obligation to express or withhold information from Prestigious University?
3. What concerns would you have about Doris' career as a researcher?
4. Imagine that when Doris completes her postdoctoral fellowship at Prestigious University, and lists Dr. Williams as her mentor. How should Dr. Williams respond if a chairperson of a department that is considering Doris for a faculty position calls for a reference?

Discussion Points

Ambition is a great motivator, and Doris' ambition is one of her many assets. But, ambition also led to her spreading herself too thin during her postprofessional master's contributing to her failing to meet her responsibilities. Doris needs help establishing goals and setting priorities. She appears to have fallen into a habit of making expedient choices that will hamper rather than help her professional development, in the long term.

Dr. Williams is supportive of Doris and she owes her the same direct communication that she would have with any colleague. Had Dr. Williams confronted Doris with her first disingenuous action, the rest of the case problems may have been avoided. As things stand, Dr. Williams does not owe Doris any cover-up, but neither does she have the right to torpedo her job.

Some of Dr. Williams' choices were also unwise. If Doris' work was truly a collaborative effort, it was irresponsible of Dr. Williams' to obscure his role so that Doris could win a prize. Authorship is not a gift that can be given; it is a record of the work.

Promoting Integrity in the Next Generation of Researchers

MENTORSHIP

Conflicting Roles

Laura Tung, an occupational therapy entry-level master's student, is a paid research assistant for Dr. Sally Hammer's study of the patterns of use, impact on quality of life, and participative meanings associated with adaptive techniques and assistive technology used by teenagers with chronic physical challenges. Dr. Hammer is also Laura's thesis advisor. Laura is working toward an academic career, and knows that her goals will be helped by a strong graduate school research experience. Dr. Hammer has a great deal of faith in Laura, and has also agreed to be her research mentor.

Laura is committed to her professional growth, and already spends many unpaid hours studying the published research pertinent to the project. Laura has performed well and has expanded her understanding of research. As her mentor, Dr. Hammer has arranged several networking and enriching research experiences for Laura. The two also get together every few weeks to eat lunch and/or discuss research issues and Laura's current efforts in her paid research and in the development of her own related thesis topic.

In the next phase of the funded project, Laura was expected to supervise an undergraduate work-study employee's data entry, to perform the statistical analyses, and to draft a report of the findings. The report would ultimately be used to write the results section of the project report and publications. It was agreed that this work would improve Laura's understanding of statistics and earn her co-authorship on study publications. Recently this plan changed. The project's consulting statistician recommended a more complicated series of statistical analyses than originally planned. Dr. Hammer believed that the analyses were beyond Laura's skills, so she hired a statistician to analyze the data and draft the report of the findings. This left Laura with little paid work to perform, so the undergraduate work-study student was shifted to a different project and Laura was told to use her paid time to enter participants' data. Laura was unhappy with this change in responsibilities, but did not complain or discuss her frustration with Dr. Hammer. The change in duties did affect Laura's attitude and interest in the project. She shifted her focus to other interests and no longer attended the outside lectures or research meetings suggested by Dr. Hammer. Their lunch time no longer seemed to mesh and they have seen each other infrequently since Laura's responsibilities changed.

The data are now analyzed. Dr. Hammer wrote the project's first report, and sent a copy to Laura for her input. Laura could add little to the paper, but did suggest an improved label for a figure. The paper was published with Dr. Hammer as first author, the statistician as second, and Laura as third.

Student Questions

1. How do you define the problem(s) in the case?
2. How did Dr. Hammer's and Laura's roles as employer/employee and mentor/trainee contribute to these problems? How might these same roles have assisted in avoiding the problem?
3. What can be done now to put the mentorship and employment on track?

Discussion Points

Dr. Hammer appears to have lost sight of her responsibilities as a mentor, defaulting instead to those of employer. As employer, Dr. Hammer's primary goals are to complete the work at hand. Although one could argue that an employer shouldn't change jobs unilaterally, Dr. Hammer has the right to reassign jobs and employees have a right to leave if they don't like the new assignments. As a mentor, Dr. Hammer is committed to assisting in Laura's professional growth. By shifting Laura to mundane and unskilled tasks, Dr. Hammer appears to have lost sight of her mentoring responsibilities. If Dr. Hammer had considered her obligation, she might have brought Laura into the original statistical consultation, and chosen to mentor Laura in the new statistics. This would have taken more of Dr. Hammer's time and more of Laura's time, but it might have allowed Laura a closer role with the statistician, ultimately enabling Laura to write the results section as planned.

As a mentor, Dr. Hammer should have used a more collaborative model; openly discussing the choices before enacting any change in Laura's tasks. It is Dr. Hammer's responsibility to initiate this conversation, but when she did not, Laura should have brought up the topic. When Dr. Hammer and Laura stopped communicating expectations and addressing issues in a forthright manner, they both abdicated their responsibilities. As the case stands, Dr. Hammer and Laura are disengaging from one another. Discussing expectations and actions would help re-establish the mentor/trainee relationship ...and move toward a rectified situation.

There were several turning points in the case. The article offered a second opportunity to bring up issues. Since the order of authorship changed from the original plan, the collaborators should have discussed this well before drafting the report. This could have opened discussion of Laura's original goals for mentorship, and re-integrated Laura into the process. Laura's investment in the study appears appropriate for authorship, but even if after the fact, Laura must understand the statistical analyses and resulting conclusions before being listed as an author. This will take time from both Dr. Hammer and Laura, but it may help heal the fractured mentoring relationship.

Even at this late date, it would be wise to discuss the situation. Dr. Hammer needs to understand what went awry, and Laura needs to have her issues aired, and to recognize that her inaction contributed to an unfortunate outcome.

Promoting Integrity in the Next Generation of Researchers

FISCAL RESPONSIBILITY

Student Reading

OBJECTIVES

1. Describe ways in which research may be funded.
2. Discuss the responsibilities associated with each step of funded research.
3. Describe the boundaries of a funder's role in dissemination.

READING

Most research studies have costs associated with them. Surveys must be printed and mailed, assessment and intervention materials purchased, personnel paid. If these costs are small, a researcher may perform work on his or her own, and pay for materials *out-of-pocket*, with personal monies. Larger needs are likely to involve external funders, and external funding brings up several issues related to responsible conduct. Some, such as data ownership, conflict of interest, and dissemination (authorship), are addressed in other units in this curriculum. This unit focuses on the issues associated with honestly gaining funding, using funding, and reporting the history of funding.

Types of Funding

There are three common ways of funding research: personal funds, internal funds, and external funds.

Personal funds: As stated earlier, research may be funded out-of-pocket. This form of funding carries the lowest level of oversight in most institutions. As long as the study is approved by the researcher's institutional review board and there is complete transparency of funding, paying small amounts of money toward one's own research is not considered irresponsible. Thus a student may pay a statistician for assistance or reimburse participants for parking, as long as the student's advisor approves and oversees the student's doing so.

Internal funds: These are monies received from a researcher's institution. For example, a student might receive funding assistance from his or her occupational therapy program. Such assistance may be in the form of services or funding. For example, a program might permit the student to use its photocopying machine at little or no cost, pay for statistical consultation, or purchase an assessment device and then let the student use the device.

External funds: These come from sources outside the researcher's institution: manufacturers or other commercial entities; regional, state, and federal governments; public and private foundations; and other philanthropies and societies. Small studies may be funded through *in-kind* donations—that is,

contributions of critical goods (merchandise) or services, without any transfer of funds.

State and federal government contracts and grants are the most valued source of external funding for large research studies conducted by faculty at universities and colleges.

Responsibility Across Funding Steps

Grant and contract funding involves three steps: requesting and accepting funds, managing funds, and reporting on funding history (University of California, n.d.). There are ethical issues at each of the three steps:

Requesting and accepting funds: When a researcher requests and accepts funds, his or her grant proposal should accurately specify the research question being asked, the way in which it will be answered, and the approximate costs of conducting the work and the analyses. A grant budget is an estimate, but the estimate should be realistic and responsible. Although some budgetary changes are likely during a project, a researcher should not promise to produce something that he or she knows is undeliverable. In addition, the researcher should immediately notify the funder if unexpected events seriously affect the study's end product (typically referred to as the *deliverable*).

Funding should be conceptualized as a supportive gift. The funder is not purchasing a study; it is supporting the researcher's study. From this perspective, external funders do not own study data, nor do they own rights over dissemination of the study findings. This is especially important when a project is funded by industry or another entity with a vested interest in specific results. Before signing any document, a researcher should check with his or her institution's grants office to ensure that the phrasing does not allow a funder to interfere with dissemination or give decisions to the funder that should rightly be retained by the researcher.

Some funders pay a researcher's institution an *indirect* cost. This payment is a form of tax, unrelated to the specific work being done on the study. It is meant to help pay for overhead costs at the institution related to general research. Institutions must either agree to the funder's level of indirect payment or renegotiate the amount before the researcher accepts a grant. Indirect payments should be included in the original budget and should not be drawn from the monies necessary to complete the proposed project.

Managing funds: The term *stewardship* is commonly used in discussing management of funded projects (Office of Research Administration, n.d.). A *steward* is a person who manages someone else's finances or is in charge of another's property or affairs. So *stewardship* indicates that a grant is not really the researcher's money. The researcher is the steward of the funder's money. The money was given, not for the researcher, but for a goal held in common by the funder and the researcher.

Using federal rules as their guide, most funders agree that research costs must pass three tests: They must be *allowable*, *allocable*, and *reasonable* (Office of Management and Budget, 2000).

To be *allowable*, an expense must fall within the rules set by the funder. These rules are the funder's to set, and may seem arbitrary. For example, a funder may refuse to fund travel outside the country while allowing travel within the country. A responsible researcher knows the funder's rules and considers management of the funder's grant to be a trust. If a need arises that is outside the rules, the researcher must get permission from the funder before making the expenditure. In this situation, getting permission is definitely wiser than seeking forgiveness, for a funder can disallow an unallowable cost at any time, and shift the burden of the cost to the institution.

The term *allocable* comes from the verb *allocate*, meaning *to distribute*. To be allocable, an expense must be directly related to the funded study's purpose. Most funders recognize that budgeted costs may change. Therefore they will allow changes within a certain percentage of the total budget. The price of equipment may rise or fall, or an additional worker may need to be hired. As long as these costs are within the scope of the project and within the total of the award, a funder will generally consider the costs allocable.

Other costs are less likely to be acceptable. For example, a cost associated with one research project cannot be shunted to another research project. So using a grant to purchase a second study's equipment is irresponsible, even if the funded study had "extra money."

The *reasonableness* of research costs may be based on competitive bids, but is generally based on what a person uninvolved with the research or institution would pay for the same services or materials. Thus, paying a colleague to consult on a project at the going rate for that work may be reasonable, but paying twice that rate is unreasonable. Such excessive payment raises a potential perception of conflict of interest, for the additional cost may appear to be associated with a personal relationship between the researcher and the recipient of the payment, not with the work that needs to be performed.

Reporting on funding history: Most funders require scheduled reports of expenditures and research progress, and a final report of expenditures and research findings. Even if a researcher's institution has an office that files the final accounting of the budget, all fiscal issues are ultimately the responsibility of the researcher.

If funds remain at the time of the final report and the closing of the grant, funders have two options: They may require that the researcher return the remaining funds, or they may permit a *no-cost extension* of the grant. A no-cost extension

adds no new money to the project, but allows a researcher to spend remaining monies to complete a project that was unexpectedly delayed beyond its original timeline or to use the remaining money toward an *added value* task (i.e., something originally not planned for the study, but which the remaining money will support).

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Promoting Integrity in the Next Generation of Researchers

FISCAL RESPONSIBILITY

A Series of Studies

Study 1

Dr. Orlando Sims, a new PhD in human development, has just started work as an assistant professor in the occupational therapy department of a well-established private college. Dr. Sims knows that his institution wants to develop its research base, and one of his first acts is to obtain a 3-year grant from the foundation, *Attending 2 Attention Deficit (A2A)*, which is funded by a private estate. The grant will let Dr. Sims study the effectiveness of a one-to-one intervention that combines a cognitive intervention with one that is sensory-based. The foundation calls the treatment *Cog+Sens*.

Dr. Sims will study whether Cog+Sens improves time-on-task for children with attention deficit hyperactivity disorder (ADHD). The Cog+Sens program is strongly promoted on A2A's Web site, although they do not claim ownership of the intervention. The foundation wants an objective assessment of Cog+Sens' effectiveness and Dr. Sims has accepted the grant. According to the grant agreement, Dr. Sims' college owns the study data, and Dr. Sims is free to disseminate the study's findings without interference from the foundation. Dr. Sims conducts a series of interim analyzes on the outcome data as it is gathered. He summarizes these results in his first and second annual reports. At the close of the study, i.e., at the end of the third year of the project, Dr. Sims' final report indicates that Cog+Sens has some very strong points, but some weaknesses as well. Dr. Sims' report indicates several changes that could improve Cog+Sens. These reports are privately circulated to foundation board members, but are not disseminated in any public forum.

Study 2

Midway through Study 1 (described above), Dr. Sims applied for a grant from a different organization (*Best Attention!*), a public organization that is funded by parents who have children with ADHD. In this grant, Dr. Sims asked for funding to study the effectiveness of *CASP*, a cognitive and sensory processing intervention designed to decrease impulsive behavior in the classroom. *CASP* has many similarities to Cog+Sens but incorporates the changes suggested by the evolving findings from Study 1. In *CASP* Dr. Sims has changed the frequency and length of intervention sessions and the overall duration of the intervention program. He has also changed some of the activities in the intervention, so that they are more clearly differentiated into cognitive (e.g., cueing, repetition) or sensory processing (e.g., problem solving ways to enhance attention through the use of context appropriate sensory input). Like Study 1, Study 2 is based on children with ADHD. When he applied for funding for Study 2, Dr. Sims included the preliminary data from his first annual report for Study 1. This preliminary data helped convince the Best Attention! foundation to fund Dr. Sims' study.

As Study 1 ends, Dr. Sims is increasingly involved in Study 2. he shares the final report from Study 1 with Best Attention's board of directors. The Best Attention! board is excited that his Study 1 findings support the work he has already begun in Study 2.

Epilogue

As Study 2 draws to a close, it becomes clear that CASP increases time on task and decreases impulsiveness for children with ADHD. Dr. Sims goes to his college's research and development office for help in developing a patent for the new intervention. Dr. Sims plans to set up a private company, with himself as Chief Executive Officer (CEO). The university and the new company, *SIMply Better Attention (SBA)*, will divide the royalties from all sales of the intervention materials.

When A2A and Best Attention! foundations hear of Dr. Sims' plans, both boards threaten to sue. A2A claims that Study 2 was possible only because of the work that they had funded for Study 1. They are incensed that they were never told about Study 2 and were never offered the opportunity to fund it. The Best Attention! foundation is equally angered over Dr. Sims' new company. They believe that they have an investment in the product, having funded the study that *proved* its effectiveness. As a non-profit public organization, they believe that the intervention should be available at cost, and not as part of a profit-based company.

Student Questions:

1. Did Dr. Sims have the right to apply for a grant from a different organization while still working on the first grant funded study?
2. There are four entities involved in the current mess: A2A, Best Attention!, Dr. Sims, and the college. One critical question is, "Who owns Dr. Sims' data from the first study?" Is this different from the entity owning data from Study 2?
3. What could Dr. Sims do now to address the issues, assuming he wants to continue researching in this area?
4. Should public and private foundations fund treatment studies if the resulting product will be patented?
5. How could Dr. Sims have conducted his inquiries so that all parties were content with the final outcome?

Discussion Points

1. *Did Dr. Sims have the right to apply for a grant from a different organization while still working on the first grant funded study?*
Ethical research relies on transparency. It is not unusual or unethical for a researcher to have several active research grants and Dr. Sims has a right to apply for funding wherever he chooses. But, because Dr. Sims' second grant derives from his work on the first, he should have informed A2A of his intentions to seek other funding and offered them a *right of first refusal*. If A2A refused or deferred

his second grant application, Dr. Sims should have notified them that he would seek funding elsewhere.

In addition, although Dr. Sims has the right to disseminate his findings, it is less clear whether this right extends to his private use of interim findings, especially if these same findings had not yet been shared with the A2A Board or the general professional population. While this is a grey area, in this case a review board might consider Dr. Sims' action inappropriate and unethical.

2. There are four entities involved in the current mess: A2A, Best Attention!, Dr. Sims, and the college. One critical question is, "Who owns Dr. Sims' data from the first study?" Is this different from the entity owning data from Study 2?

The college is likely to consider itself the owner of any item produced by both Study 1 and Study 2. This is because Dr. Sims worked on the study as part of his employment at the college. That is, the grant paid the college to pay Dr. Sims; the grant did not independently hire Dr. Sims to perform the work. This ownership would be true unless a funder specified in their agreement, contract, or grant that the funder would accrue rights to any product. Generally a university or college will fight hard to prevent this type of wording in any agreement, contract, or grant. This is one of many reasons why students and faculty should have agreements, contracts, or grants reviewed by their academic institution's boards or sponsored projects' centers before they are signed.

In this case, Dr. Sims and his college have agreed to share royalties, but this agreement must be negotiated.

By the way, students may ask how a treatment can be patented. Think of all of the teaching, patient education, home program, and assessment materials that make up an intervention. Dr. Sims is unlikely to be able to control professionals' use of his basic treatment approach, but he can patent or copyright the name of the treatment and its supporting materials.

3. What could Dr. Sims do now to address the issues, assuming he wants to continue researching in this area?

Dr. Sims has dug himself into an ethical and professional hole. His current dispute could do grave damage to his reputation and that of his college. At this point, the parties need to discuss the matter to determine what might make everyone more content, even if they can't be made happy. Dr. Sims might start by recognizing (and therefore apologizing) to both funders. Sharing royalties or foregoing patents and placing the materials in public use may be considered as options. This does not mean that it is unethical to create and legally protect new technology or materials developed from research. It means that any such commercialization should consider the expectations (implicit or explicit) of funding sources, and clarify issues before funding is sought or accepted.

4. *Should public and private foundations fund treatment studies if the resulting product will be patented?*

This is a matter to be decided by each foundation board. If a board does not wish the products resulting from its funded research to be patented, it may choose to fund only researchers willing to forego this process. In the current academic climate, it would be wise for a board to make this clear in its funding. Otherwise, most academic institutions would require that the agreement, contract, or grant expressly assign to the college the right to patent all products issuing from the research. In this case, this would include the researched protocol and materials and special tests or forms used in the study, among other items.

5. *How could Dr. Sims have conducted his inquiries so that all parties were content with the final outcome?*

Dr. Sims should have met with the board of A2A foundation when he first considered writing a grant for Study 2. Ethically he owed that board a clear explanation of the findings, including an explanation of the potential for the treatment materials. Dr. Sims should not have relied on his written report, which the board members might or might not read. The board members believe that they had a great idea taken from under them, after they funded an initial study in good faith.

Similarly, Dr. Sims should have been more transparent with the Best Attention! foundation when working with his university to establish his own company and apply for the patent. This lack of transparency is, perhaps, the greater of the two errors because now Sims has the potential to profit personally from his community-funded research.

Dr. Sims has sullied his own reputation, and that of his college, by working as he did. He could be brought up for conflict of interest by the college, and in fact could be barred from research using external funds for a period of time.

Promoting Integrity in the Next Generation of Researchers

FISCAL RESPONSIBILITY

Multisite Project

Dr. Anchieta Angelina is a recent graduate of a PhD occupational therapy curriculum and supervisor of therapeutic services in a large school district. Dr. Angelina has developed a model intervention aimed at increasing engagement in meaningful leisure activities for adolescents with physical disabilities. After pilot-testing her model, Dr. Angelina proposes to field test her intervention in four schools with special after-school programs for adolescents with disabilities. The schools are culturally diverse, representing an inner city, a rural, a county, and a private school environment. This diversity was considered a major strength of the proposal and was instrumental in the *Toward a Better Living* foundation's decision to fund the two-year project

Each setting is referred to by its descriptor, so there are four settings: Inner City, Rural, County, and Private. Each school administration has identified an onsite coordinator (OC) to work in the after-school program. The grant will pay the school district for 10 hours of work per week, and the OC will be released from the same amount of his or her usual work as a teacher. Each OC will direct the grant activities at his or her site. The 10 hours of research work includes time to meet with Dr. Angelina, plan and implement the interventions, document and track activities, and contribute to annual and final reports.

At the start of the grant, Dr. Angelina holds a staff meeting to discuss OC roles and responsibilities and the grant timeline. Because of travel distance and busy schedules, the group's monthly meeting will be virtual, using the software program NetMeeting to engage in real-time interactions. Each OC is expected to write brief monthly status reports summarizing their progress toward the grant goals (e.g., number of student participants, progress on data collection).

Three Months into the Grant:

In the first three months, the project appears to be progressing smoothly. All OCs were present for the monthly online meetings. Private and Inner City OCs were particularly involved in these on-line discussions. County was less participatory and Rural tended to only offer comments like "I agree" and "Me too". From the first monthly reports that were filed by each OC, it appeared that all sites would be able to recruit the needed 10 participants within the initial year of the grant. The OC from Rural was very tardy sending her second and third month's reports, but when received they indicate that she too should be able to meet the goal. Dr. Angelina decided to hold a face-to-face staff meeting at month 3; when each site should have baseline data on at least three adolescents. She felt this was an ideal opportunity for the OCs to share their trials and tribulations, and perhaps engage in some group problem solving for hurdles that were being encountered. The OC from Rural failed to attend the meeting, calling in sick at the last minute. When Dr. Angelina tried to reach her by telephone, the OC did not return the

calls. At the end of the third month, the OC sent an email indicating that all was going well and that she would attend the next virtual meeting.

Student Questions for the First Three Months of the Grant

1. Is anything going wrong in the study?
2. Is it reasonable for Dr. Angelina to press the OC from Rural about her less meaningful participation or missed report deadlines? Would *you* press these issues?
3. What is the relationship between Dr. Angelina's fiscal responsibilities to the funder and her supervision of site OCs?

Discussion Points for the First Three Months of the Grant

Dr. Angelina has established a reasonable supervisory system, but it is working for only three of the four sites. Dr. Angelina must be a responsible steward of the money that is funding the study. Therefore, she immediately needs to address her concerns with the OC at Rural. This should be done respectfully and privately, but should clearly describe her expectations for *participation* in the online sessions and the absolute requirement for the OC's monthly reports. Dr. Angelina will want to emphasize that she wants accurate reporting, not simply positive information. She may also want to share some of the discussion that the Rural OC missed at the last meeting. This may help the Rural OC understand that the work is not going perfectly smoothly at other sites. Dr. Angelina owes Rural's OC explicit and specific feedback. Without it, the OC will not know that her site is failing to meet requirements. Ignoring or deferring the problem is unlikely to solve it. So, as difficult as it may be, Dr. Angelina needs to set reasonable but explicit demands and require that the Rural OC meet them.

The Case Continues - Nine Months into the Grant

Six months pass and the grant is in its ninth month. The reports from Inner City, County, and Private OCs indicate that they are on-target in their recruitment and data collection. The Rural OC's monthly reports show that she has recruited only two participants, and has not begun to implement the program. The OC at Rural offers several reasons for the program delays. These include that the rural disabilities' bus system hasn't been flexible about after-school programming, that parents are hesitant to have a disabled child stay after school; and that the district is generally hesitant to do something new – making even good changes difficult. In addition, the OC at Rural reports that a colleague is battling cancer and that the OC is now responsible for both her own and the other teacher's work. In her report, the OC promises to “make the study a priority” and catch up with the other OCs “as soon as I can”. Rural's OC asks that Dr. Angelina not speak with the Rural School's administrator. The Rural OC wants to resolve the problems herself.

Student Questions for Nine Months Into the Grant

4. Are Rural's OC's explanations for delayed recruiting and programming reasonable?
5. What issues must Dr. Angelina weigh before acting?
6. What action do you think she should take?

Discussion Points for Nine Months Into the Grant

Dr. Angelina should be asking some serious questions. The Rural OC's report of her added duties indicates that the grant may not be getting the time that the rural school administration agreed to allow. Dr. Angelina should verify this assumption with the Rural OC, and speak with the schools' administration if the OC is being placed in an untenable situation. The administration agreed to the study's timeline, and they are receiving grant funds for the project. While it is understandable that things change when a colleague is ill, the rural administration has a commitment to the grant that cannot ethically be overlooked. The Rural OC is acting as if her work is a personal agreement between herself and Dr. Angelina; as if her recruitment problems are a shared secret rather than a problem that needs to be resolved. If Dr. Angelina honors the OC's request and does not notify the rural school's administration, Dr. Angelina will be placing her confidence in the OC, and treating the school administration as a threat rather than as an official partner in the study effort.

Separate from the issue of the OC's time, Dr. Angelina also needs to address the problems with recruitment and productivity. It is clear that the site is not producing the data needed, and the OC needs to understand that the current poor recruitment can easily lead to an irreparable recruitment gap. Together, Dr. Angelina and the OC need to strategize ways to improve recruitment and ways to adapt the intervention to better fit with the rural culture.

The Rural OC's poor production should not be allowed to continue. Dr. Angelina has a commitment to the granting agency, and the rural site has a commitment to Dr. Angelina. If Dr. Angelina continues to wait for Rural to correct its own actions, both her research reputation and that of her institution may be at risk.

The Case Continues - Twelve Months into the Grant

In spite of Dr. Angelina's strategizing, frank discussion, and explicit expectations, the Rural OC has recruited only one additional student. She now has three of the promised 10 students targeted for her first year's portion of the project. It is unlikely that the site will ever meet its commitment for 10 participants per year, across the two years of the study's data collection (total = 20).

Dr. Angelina meets with both the Rural OC and her administrator. Both parties report that the OC's colleague has returned to work part time, and that the school has hired a substitute teacher for the other half-time need. They acknowledge that the OC did not have proper release time until now and guarantee that the OC will now have the time that

was originally planned (10 hours each week) plus some additional time (paid by the school) to help her catch up on the project.

Student Questions Twelve Months into the Grant

7. What are Dr. Angelina's fiscal responsibilities at this point?
8. How should Dr. Angelina weigh her investment in Rural vs. the current and prospective productivity of that site?
9. What actions do you think Dr. Angelina should take about the Rural site?
10. How should Dr. Angelina be reporting her study's recruitment?

Discussion Points Twelve Months into the Grant

Dr. Angelina has allowed this situation to continue for more than half of the time allotted to the grant's data collection, and little has changed. Dr. Angelina's first annual report must account accurately for the limited progress at the Rural site. From the funder's perspective the problem is one of enrollment, with a single site that is problematic. The funder will want to see that there is a plan for remediation of the problem. This may force Dr. Angelina to consider the timeline, concrete methods to remedy the problem, and explicit goals that will indicate whether the behaviors or outcomes are satisfactory.

There is no indication that Dr. Angelina has gone beyond the project's budget. However, we can assume she has spent the bulk of the Year 1 budget and is missing nearly 25% of the study's outcome data. She would need to do some budgetary readjustment **now** to acquire the data she planned for the study. There comes a time when one must cut one's losses. Dr. Angelina would be well served if she were to end her work with Rural. She may even wish to ask for a refund of money from the site. This could be justified because she has actually paid for time that she never received. However, such action may not be accepted well by Rural's administration, especially if Dr. Angelina acquiesced to the OC's request at the ninth month and did not notify the administration of the problem.

Dr. Angelina needs to assert her fiscal responsibility. To be a proper steward of her grant, Dr. Angelina should have discontinued the site earlier this year; but everything looks clearer in hindsight. At this point Dr. Angelina needs to look carefully at her project goals, determine how to reorganize, and work with the project officer on the grant to potentially revise her predictions for outcome.

The Case Continues -18 Months Into the Grant

Unfortunately, Dr. Angelina continued her study at Rural, and things have improved only slightly at the 18-month point in the grant. The Rural OC has implemented the model with five students, although the OC's monthly report states that she has an increasing number of students "almost" recruited.

Dr. Angelina decides that it would be best to terminate the contract with Rural, and try to establish a relationship with another Rural school and collect data there.

Rural has collected complete data for four of the five children in the program. The fifth child needs to complete the program, and if she does, this will also provide useful data. Dr. Angelina must collect data on an additional 15 children at a different site. The Rural OC and the administration are not happy with the situation. They argue that they have actively tried to meet Dr. Angelina's requirements, and that she has an obligation to their children to ensure that they have access to the study's program. Dr. Angelina knows that the Rural OC did not intentionally fail to perform, but the rural school did not meet the obligations of the study, and she believes that continuing at that site will eliminate any chance that she has to gather enough data from a rural population. Dr. Angelina asks that the Rural administration return 50% of the money that they have been paid, to allow her to fund collection at the new site. The administration refuses, pointing out that the Rural OC tried to produce and that it was not their fault that they were unable to provide the anticipated participants. The administrator is conciliatory, and offers to continue to collect data at their site at a reduced rate.

Student Questions for 18 Months Into the Grant

11. Does Rural have an obligation to return Dr. Angelina's money to permit the study to be completed elsewhere?
12. If Dr. Angelina terminates her research at Rural, what obligations does she have to the final participant? What obligation does she have to students who were interested in starting but had not yet committed to the program at Rural?
13. Who must be informed of the termination? Why?
14. Is Dr. Angelina obligated to find another rural site to complete her study? If so, how would she fund this replacement program now that a significant proportion of the money has been spent?

Discussion Points for 18 Months Into the Grant

Dr. Angelina is fully within her rights to terminate her relationship with Rural, and should have done so earlier. If the site had deliberately misled Dr. Angelina or falsified data they would have owed the funding. But this is not the case. It is unlikely that Rural will return any of its money, unless their letter of agreement with Dr. Angelina specified that funding would have to be repaid if the site failed to meet study goals.

Given that Dr. Angelina met regularly with Rural's OC, expressed concerns, and met with Rural's administration, she seems to have done her job in a professional manner, although it would have been better if she had recognized the serious nature of the problem earlier. If Rural is troubled by her termination there is little that can be done about it at this point.

Dr. Angelina has an obligation to finish the intervention for the one student who is currently in the program, and Rural will need to do this. Hopefully, Rural's own recognition of their failure and their own ethics will ensure that this takes place. The study has no obligation to the interested but uncommitted participants.

Dr. Angelina will need to inform the *Toward a Better Living* foundation of the changes that she plans. If she intends to find another site and have a new OC recruit additional participants, she may need to request a no-cost extension from the funding agency. Dr. Angelina will need to look at her budget carefully and determine what new costs she can afford. The foundation may require a revised budget, but even if it doesn't, it would be wise for Dr. Angelina to develop one to ensure that the additional site is feasible. If adding a new site is not financially feasible, then Dr. Angelina will need to inform her institution's grant office of the problem and devise a solution. Dr. Angelina's reputation is at risk because of she subordinated her fiscal responsibility to her desire to make the original plan work. In addition, Dr. Angelina will need to get permission from all involved Institutional Review Boards to change recruitment numbers and sites.

Promoting Integrity in the Next Generation of Researchers

FISCAL RESPONSIBILITY

Fiscal Stewardship

Adara Manoukarakis is an entry-level master's occupational therapy student and a paid research assistant (RA) for Dr. Angel Pella, a professor in occupational therapy. Dr. Pella is also Adara's research advisor. Dr. Pella has been studying the effects that a 6-week therapeutic summer camp has on insight and impulse control in adolescents with conduct disorder. The project has gone smoothly and is winding down. When the project did not require all of Adara's scheduled time, Dr. Pella has assigned her other activities. For example, Adara has:

- Performed literature searches and copied and filed articles on conduct disorder issues related to driving (the topic of Dr. Pella's next grant),
- Helped in the occupational therapy office, performing clerical work, and
- Assisted in another faculty member's research data entry.

In each case, Dr. Pella's grant has paid for Adara's work.

On her last work day, as Adara is signing her pay request, she becomes concerned. The document requires that Adara sign her name, verifying that as an RA she "performed X hours of work on the project listed above (i.e., the summer camp study)". Adara brings her concern to Dr. Pella, "I worked on the summer camp for most of my time this summer, but for about 10% of my time, there wasn't any project work to do, so I worked doing the other stuff. Recently there's been so little to do that only 75% of my time has been on the summer camp project. About 25% of my most recent work hours were spent on other tasks. Some of them seem related to the camp, but others aren't related at all to the project. I just realized that I've been signing this paper every two weeks but I've spent a chunk of my time on projects that are not related to the study. I don't know if I can sign this – and I'm not sure I should have signed the others!"

Dr. Pella reassures Adara saying, "It's okay. The pay request is just a formality. The university just uses it to process your paycheck. The funder only sees my reports and it doesn't care what you did as long as we get the project done. The foundation that funded the summer camp study will be very happy. That's all that matters." Dr. Pella continues reasoning aloud, "You did the summer camp work faster than we anticipated...and it wouldn't be ethical to pay you to just sit there. So, since the summer camp project didn't need your hours, I chose to share your time with the rest of the department. It's how the department works! In fact, I used another faculty member's RA to help write the grant that pays you." Adara is not convinced and presses the issue. Dr. Pella becomes irritated and states, "If you don't feel comfortable signing the form, you can change the numbers of hours for this last two weeks. But, I don't have any way to pay you for unlisted hours,

so you'll get less pay. It's your choice." Adara is stunned and distressed by Dr. Pella's alternatives. She needs that money.

Student Questions

1. Dr. Pella saw the alternatives as a) pay Adara for no work, b) stop paying Adara when there was no work, c) pay Adara for necessary but unrelated work. Dr. Pella chose the last alternative as the most responsible option. What does this tell you about Dr. Pella's priorities? Do you believe that the decision is reasonable and responsible? Why?
2. Can you think of other options that Dr. Pella did not consider regarding Adara's work and payment? Which of these alternatives are more or less responsible?
3. What option should Adara take?
Should she sign the pay request? Not sign and accept the loss of pay?
Should she discuss the issue – and with whom?
What are each options' outcomes, benefits, and costs?

Discussion Points

There are several issues raised by this case. It is clear that Dr. Pella has competing responsibilities: 1) to meet Adara's employment contract and 2) to be a proper steward of the foundation's funding. Students should discuss why these responsibilities conflict in the current case, and how these may be resolved. Funders often permit monies to be shifted from one study-related purpose to another study-related purpose (e.g., using money originally budgeted for supplies to instead pay for participant recruitment costs; or money for travel to be used for unanticipated supplies). But funders are less likely to approve Adara's library work for Dr. Pella's next grant application and are frankly *unlikely* to think that their grant funds should support the OT Department as a whole. Thus, Dr. Pella's assertion is likely to be inaccurate. The funds being used to pay Adara are not properly allowable or allocable. The current case is egregious because of the degree of misuse, but even smaller misuse would not be responsible fiscal stewardship.

Dr. Pella asserts that charging one study for work on another is a common behavior in the OT Department. If so, there is a dangerous culture being developed and passed on to students. It is well known that mentors' actions strongly influence students. Dr. Pella's misuse of funds provides an unethical model of behavior to Adara, Dr. Pella's other student workers and advisees, and other faculty members. If Adara brings the issue to the attention of the department chairperson or the department's director of graduate studies (DGS), it may be enough to prompt the department to discuss its culture and help clarify responsible conduct related to grants. Dr. Pella's action is quite common, and may never be caught or considered egregious, but that doesn't make it ethical or responsible. If discovered by the funder, it is likely to cause larger problems for the department.

During class discussion, it is interesting to focus on the conundrum that Dr. Pella faces. Students are promised regular pay on regular schedules (i.e., a guaranteed amount for a guaranteed number of hours per week) but grant work may not progress on that same

schedule. Researchers who do not plan for students' downtime or who overestimate the student time needed for a project may wonder what they should ethically do with a student's time. The behaviors that protect the student and are also fiscally ethical would include: 1) giving Adara work that is within her capabilities and still grant related, 2) getting permission from the funder to use the money in the new manner, 3) renegotiating and permitting Adara to choose to take unpaid time-off from the grant if she wants to. The first alternative assumes that there is always grant work to be done, but that this work may not have initially been expected of Adara. For example, Adara might be asked to perform more mundane study tasks (e.g., cleaning up and closing down the summer camp), or may be asked to take over more advanced tasks (e.g., brainstorming and researching additional activities for subsequent years, summarizing published materials pertinent to the topic; creating figures and tables for the final report). The tasks in the case study appear to renege on the ethical responsibility to the funder and skirt the rules of the institution. They therefore leave both the student and faculty vulnerable to disciplinary action. Irresponsible options include:

1. Paying the student for doing nothing (an improper stewardship of the grant) or
2. Reneging on the employment contract with the student, by discontinuing her employ once the work is complete (something that unfairly disadvantages the student). This is acceptable only if the student prefers to have the free time in lieu of the money. Or
3. Privately agreeing that time not used this week will be performed next week. Such agreements seem harmless for small amounts of shifted time, but can be problematic if large chunks of time are unofficially shifted in this manner. A student could be coerced into providing work long after they expected to be 'free' – or into providing a double work load at a time when it is hard to take on these additional hours. Conversely, an instructor could be unable to collect on the prepaid work time when the grant requires it.
4. Paying the student for work that is unrelated to the project. Dr. Pella has asserted that the funder would accept Adara being loaned to perform tasks unrelated to the study. If this is the case, a telephone conversation with the funder would verify the acceptable or unacceptable nature of this choice. If acceptable to the funder, this choice is fully ethical. If unacceptable to the funder, this choice is irresponsible because it relies on explicitly or implicitly inaccurate reporting to the funder.

One large clinic foundation recently paid \$6.5 million to the Federal Government when it was discovered that the foundation had routinely transferred money from one grant to another, and tried to hide the transactions from the agencies that funded the projects (Department of Justice, 2005). While these two cases differ in scale they are parallel in principle.

Adara is in a three-way squeeze. She does not believe that it is responsible to sign her pay document (indeed, she believes that she should not have signed the earlier ones), but she also does not think it is fair that she lose a portion of her pay, and she is hesitant to do anything that might interfere with her relationship with her research advisor.

Although it would be uncomfortable, Adara could try to revisit the situation with Dr. Pella. Dr. Pella is Adara's advisor as well as her employer, and an interaction about one aspect could affect the other. Adara's initial interaction may have caught Dr. Pella off guard, and a second discussion might offer better alternatives. Perhaps Dr. Pella can confirm that the funder allows work *off-project*. Or, Dr. Pella may offer to pay Adara from a different source of funds.

If Adara's second effort with Dr. Pella does not resolve the issue, she may want to consult the department's chair or the departmental director of graduate studies regarding the situation. That individual may have the option of paying from a separate funding source.

Adara should also consider whether Dr. Pella should remain her advisor, given their disagreement on this point. Adara has the right to change advisors, but must recognize that by doing so she also may have to change her planned topic to fit the new advisor's area of expertise. Adara should seek more information on this process and discuss likely outcomes before making this decision. It is wise to include Dr. Pella in this process.

It is only if Adara gets no satisfaction from her efforts within the department, that she should contemplate moving to outside offices. This might include the dean of the office in charge of graduate student employment, or the university's office that advises on fund management. If Adara plans to go to any of these outside offices, she will want to seriously consider the formal steps of whistle-blowing. In general, most academic institutions urge whistle-blowing (i.e., a move outside of the department) as only a final step in the process. The current situation appears better suited to internal management.

Reference

Department of Justice (2005). *Parent organization of Mayo Clinic pays U.S. \$6.5 million to settle grant fraud investigation*. Retrieved September 19, 2005, from http://www.usdoj.gov/opa/pr/2005/May/05_civ_292.htm.

Promoting Integrity in the Next Generation of Researchers

RESEARCH MISCONDUCT & WHISTLEBLOWING

Student Reading

OBJECTIVES

1. Define and differentiate research *misconduct* and research *misbehavior*
2. Define *whistle-blowing*.
3. Discuss the steps that are required for responsible whistle-blowing.
4. Discuss protections and risks associated with whistle-blowing.

READING

Edmund Burke said, “The only thing necessary for the triumph of evil is for good men to do nothing.” but we grew-up knowing that “nobody likes a tattletale.” So how should a student act when he or she discovers research, academic, sexual, or other forms of misconduct?

Research relies on trust. Although research is a highly social activity, researchers administer research-related funds and perform data collection, analysis, and dissemination in private with little or no supervision. Institutional review boards (IRBs) review written work, but there are few audits of actual studies. Until someone reports otherwise, IRBs trust researchers to conduct research ethically and to adhere to the methods of participant recruitment and data collection that have been previously approved. Journal editors trust researchers to provide accurate, unaltered data and findings. Funders trust that researchers will accurately report research costs and payments, administer funds responsibly, and conform to the funder’s and the institution’s rules and policies (see the unit on *Funding and Fiscal Responsibilities*).

Breaking these trusts is broadly referred to as *research misconduct*. The federal Office of Science and Technology Policy (OSTP) (n.d.) more narrowly defines research misconduct as doing any of the following when proposing, performing, reviewing, or reporting research:

- **Fabricating** data or results
- **Falsifying** study results by intentionally manipulating materials or processes, or by changing or omitting data to create inaccurate representations
- **Plagiarizing** reports by using another person’s ideas or words without appropriate credit

Other unacceptable research behaviors are also condemned, and sources outside of the OSTP may to them as either research misconduct or as *research misbehavior*, to differentiate them from the OSTP-defined term.

To be considered irresponsible, an action must have been performed knowingly, intentionally, or recklessly (Office of Science and Technology Policy, n.d.). Selecting a research practice that is known to be inadequate is irresponsible and unethical (Office of Science and Technology Policy, n.d.). Choosing a practice that has limitations from a field of options that are all limited is not likely to be considered research misconduct or misbehavior. In the same way, a research error that results from a researcher's being lazy or sloppy is likely to be considered irresponsible. An error that occurs in spite of rigorous best effort is not likely to be considered misconduct or misbehavior.

Acting on Misconduct or Misbehavior

Blowing a whistle is a cross-cultural and time-honored way of calling attention and bringing aid. Thus, *whistle-blowing* is the act of revealing "wrongdoing within an organization to the public or to those in positions of authority" (*American Heritage Dictionary of the English Language*, 1992, p. 2035) and, presumably, bringing help to correct the situation.

The people who are most likely to know about another's research misconduct are those who work on or are closely associated with a study. Therefore, it is those persons who must decide when and how to bring the help that will resolve the misconduct.

Despite the popular belief that whistle-blowing is protected by law, the action has risks. Studies indicate that two-thirds of the people who have blown the whistle on research misconduct or misbehavior have experienced at least one adverse reaction (Lubalin, Ardini, & Matheson, 1995). Adverse reactions include pressure to withdraw allegations, threats or actual lawsuits, ostracism by colleagues, loss of a job or research funding, and loss of job recommendations when looking elsewhere for employment. The last experience is especially likely to have consequences for student whistle-blowers or others just starting in their fields.

Ethics clearly require a researcher to take action when participants' well-being is at risk, or when there is an established pattern of misconduct. In situations where the misconduct is less harmful and when penalties to the whistle-blower may be substantial, Magnus and Kalichman (2002) urge that the person carefully understand the potential costs to himself or herself, as well as his or her own motivations regarding whistle-blowing, before choosing whether to come forward about misconduct. The process should follow these steps (Columbia University, 2003–2004; Magnus & Kalichman, 2002):

1. Before making any allegation, the person should write down the facts of his or her concern. These should include what was done or said, when and by whom it was done or said, and how the whistle-blower knows about the research misconduct. The person should stick to the facts and not speculate on other people's motives or on unknown aspects of the misconduct. There should be no suppositions about who else knows or does not know about the behavior, or what other forms of misconduct may have occurred. This early document

parallels an incident report in form and function, for it will serve as the strongest record of the facts after time has made memory less trustworthy.

2. The person should review and consider the facts that fuel his or her concerns. Seeing the facts in writing can help a person consider whether his or her response to the situation is personal, rather than professional, and can help clarify the seriousness of the behavior. If a behavior is not consequential and there is a personal motivation, such as a desire to get back at the researcher, the whistle-blower should reconsider his or her options. Whistle-blowers who are motivated by retribution are as likely to be condemned as the researcher who is performing the research misconduct or misbehavior.
3. If the issue is serious and there is no personal coloring to the person's concern, the person should discuss the allegations with a trusted *other* before making them formal. Doing so will help the person see how an uninvolved party might view the issue. If the conduct involves a fellow student, the person might be wise to discuss the issue with a trusted faculty member. If the misconduct involves a faculty member, the person might seek out a member of the institution's IRB, a member of its ethics faculty, or a staff member of its research integrity office. These personnel will generally hear concerns confidentially and advise on the reasonableness of the concern. Persons who are formally involved in research ethics (e.g., members of IRBs and staff of research integrity offices) can also inform the whistle-blower about the rules and the procedures that the institution uses to investigate and act on an allegation of research misconduct. Those investigating such an allegation typically do the following:
 - a. Keep both the researcher's and the whistle-blower's input confidential.
 - b. Treat both the researcher and the whistle-blower fairly and respectfully.
 - c. Protect the whistle-blower from retribution (not the case if the allegation is proven to be falsified or motivated by personal reasons).
 - d. Protect the researcher until the allegation is proven. This protection includes permitting the researcher to continue his or her research, disclosing and describing the allegation to him or her, ensuring that the investigation is thorough but confidential, and ensuring that the researcher understands and has access to appeals if the decision supports a ruling of misconduct (Magnus & Kalichman, 2002).

If the person is not assured that the institution or the agency will follow these steps, he or she may want to seek a guarantee before making a formal allegation.

4. If the person decides that he or she should take action, he or she should follow proper chain of command by first making an appointment with the administrator directly above the researcher in question. At this meeting the person may wish to offer only a verbal report, following it with a written one

after he or she discusses the situation. If this approach gets no action, the person should move up the line of command or file a formal request for an investigation with the institution's office of research integrity. In less serious cases, the allegation may be investigated by the administration. Only as a final resort should a person seek media assistance or directly inform a funder of an allegation.

Whistle-blowing can irrevocably damage relationships with colleagues, students, and faculty, and it can use much time and energy. Yet, even with these and other negatives common to whistle-blowing, persons motivated by a concern for responsible research generally say that they would do the same again (Lubalin, Ardini, & Matheson, 1995).

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Promoting Integrity in the Next Generation of Researchers

RESEARCH MISCONDUCT & WHISTLEBLOWING

Among Friends

Fumiko Kobayashi and Leslie Bakker are occupational therapy entry-level master's students, studying the effects of commercial tripoint finger splints on range of motion, hand strength, dexterity, and function in people with rheumatoid arthritis and swan neck conditions. The study is unfunded, but the splints were supplied at no cost by the manufacturer.

The students share an office and are each collecting data on 15 participants (n=30). They will write their master's paper together, but will defend the work separately. Their advisor, Dr. Harpreet Beesla trained them well and has full trust in them. They meet weekly, but Dr. Beesla does not audit or supervise their work.

The two students are close friends, and have supported each other through several personal challenges: Fumiko is living on her own for the first time and has found the financial responsibilities daunting; Leslie is newly married with a stepchild and is exhausted by her new role as mom and wife.

Fumiko has recruited and collected data for her 15 participants. Leslie has completed data collection on seven participants.

One day, Fumiko enters the office unexpectedly and sees Leslie seated at her desk with several files open in front of her. She is signing a participant's name to a consent form. As Fumiko approaches, it appears that Leslie may also have been fabricating data (i.e., all of the recorded data is in the same ink as the falsified participant signature). When confronted with this allegation, Leslie initially claims that she was just replacing a lost signed consent form and that she planned to countersign the participant's signature to indicate that it was not truly that participant's. When Fumiko presses the issue, Leslie tearfully explains that the past two potential participants ultimately declined to participate, and that she was desperate to meet her obligation to the study and to Fumiko. Leslie assures Fumiko that this is the first time she ever fabricated any part of a file, and that all the other data is legitimate. She begs that Fumiko not tell anyone what she has seen. Leslie assures her colleague that she will destroy the false file and never fabricate data again. Fumiko is torn. She knows the stress that Leslie has been under and values her friendship.

Student Questions

1. What are Fumiko's options and what are the ramifications of each if Leslie is telling the truth? If she is not telling the truth?
2. To whom is Fumiko responsible?

Discussion Points

On the surface, this case is obvious. Most students know that the right answer is that Fumiko should tell (or ensure that Leslie tells) Dr. Beesla about Leslie's misconduct. But in real life the decision is not an easy one to make. In discussion, students' claims that Fumiko should report Leslie should be challenged: *But they're good friends! You'd really turn in a friend? She may end up being punished! Isn't there another way?* Afterall, this is what Fumiko would be asking herself, "*Isn't there another way?*".

With some prodding, students are likely to suggest that Fumiko keep Leslie's secret. This opens the door to discuss the ramifications of trusting Leslie, because it presumes that :

1. The secret will be kept. Secrets are easily abandoned. Indeed, there is a Yiddish folk saying, "Two can keep a secret as long as one is dead". In addition, if the secret became public, the students' collusion is likely to be interpreted as a betrayal of Dr. Beesla's trust. Most importantly, by failing to report or to ensure that the incident is reported, Fumiko becomes an accessory to Leslie's original misconduct;
2. Leslie will keep her promise not to fabricate or alter other data. This is possible, but cannot be assumed. Once the two students enter into a pact, the burden of supervision and protection of the data falls to Fumiko.
- 3) This is Leslie's first and only fabricated data. Again, this becomes Fumiko's responsibility to investigate and prove if she is to disseminate the study's findings securely.
- 4) This is Leslie's first misconduct. It may be that Leslie has committed prior academic or research misconduct of which Fumiko is unaware. If there is a history of misconduct, should Leslie continue in a profession that relies on trust? Reporting serious misconduct to faculty ensures a paper trail.

The issues surrounding secret arrangements can also be discussed. Agreeing to a secret pact does not address any of the issues that created the original situation that may have led Leslie to make this horrible mistake. While it might initially appear that keeping the secret spares Leslie, that choice also reduces her likelihood of getting the help she needs. Misconduct is best handled in a transparent manner. Leslie's claim that this is the only fabrication should be verified by a third party (not by Fumiko), and this means informing Dr. Beesla of the incident. This will allow Fumiko and Dr. Beesla to know what data can legitimately be used and uphold their obligation to the participants, the funder, the splint manufacturer, the profession, and the study's future readers.

Fumiko's initial temptation to protect her friend from punishment could easily lead her into a morass. Dr. Beesla is part of the answer, not the problem, and she needs to be informed. However, Fumiko should **not** take it on herself to inform either the IRB or the splint manufacturer. That is Dr. Beesla's role as supervisor of the research project.

During their discussion, the class should recognize that it is Leslie who has failed to meet her obligations to the participants whose data she is subverting by adding fabricated data, to the funder, to those who might have read and believed the contaminated work, and to both Fumiko and Dr. Beesla. Although it is Fumiko who must now act, it is Leslie who should take full responsibility. At this moment, Fumiko is a victim in the situation. She has uncovered a serious breach of research ethics and her obligation to her friend does not override her obligation to ensure honest data collection and to keep her advisor informed of all pertinent issues in the study. That's likely to be the same place that the class began, but after discussion, their decision should carry an understanding of the aftermath associated with covering up Leslie's misconduct.