
Reflections on Determining Authorship Credit and Authorship Order on Faculty–Student Collaborations

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The purpose of this article is to explore the process of determining authorship credit and authorship order on collaborative publications with students. The article presents hypothetical cases that describe relevant ethical issues, highlights ethical principles that could provide assistance in addressing these dilemmas, and makes recommendations to faculty who collaborate with students on scholarly projects. It is proposed that authorship credit and order decisions should be based on the relative scholarly abilities and professional contributions of the collaborators. Furthermore, it is recommended that both faculty and students participate in the authorship decision-making process early in the collaborative endeavor.

Scholarly activity is an expected and rewarded enterprise for many professionals (Keith-Spiegel & Koocher, 1985). In academic settings, decisions regarding promotion, tenure, and salary are heavily influenced not only by the number of publications in peer-reviewed journals but also by the number of first-authored publications (Costa & Gatz, 1992). Similarly, in applied settings, professionals with strong publication records are often considered to have more competence and expertise than their less published counterparts.

Clearly, authorship credit and authorship order are not trivial matters. Because of the importance of authorship credit, dilemmas may arise when more than one person is involved in a scholarly project. In this article, we specifically address collaborative efforts between faculty and undergraduate or graduate students. The importance of authorship in the faculty–student research context was underscored by Goodyear, Crego, and Johnston (1992), who found that authorship issues were among the “critical incidents” identified by experienced researchers in faculty–student research collaborations.

The purpose of this article is to contribute to the discussions regarding the determination of authorship credit and order of authorship—in the faculty–student research context. There are six parts to the article. To provide a context for the discussions, the first part presents four hypothetical cases. Because the final authorship decisions in these cases are based on considerations reviewed later in the article, the cases end before the final decisions were determined. The second part reviews available guidelines for determining authorship credit and order. The third part describes ethical issues related to authorship credit and authorship order when faculty and stu-

dents collaborate. The fourth part of the article highlights several ethical principles that may provide assistance in resolving authorship dilemmas. The fifth part provides tentative recommendations for faculty who collaborate with students on scholarly projects. The final part revisits the four hypothetical cases with our opinions regarding what authorship decisions would have been appropriate.

Hypothetical Cases

Case 1

A student in a clinical psychology doctoral program conducted dissertation research at a practicum site. The initial idea for the study was developed between the practicum supervisor (a psychologist) and the student. The dissertation committee was composed of the chair, who was a psychology faculty member in the student’s graduate department; the practicum supervisor; and another psychology faculty member in the same department. After the dissertation was approved, the chair of the committee raised the possibility of writing a journal article based on the dissertation. The student agreed to write the first and subsequent drafts of the manuscript, the committee chair agreed to supervise the writing process, and the practicum supervisor agreed to review drafts of the paper. On initial drafts, the student, practicum supervisor, and committee chair were first, second, and third authors, respectively. However, after numerous drafts, the student acknowledged losing interest in the writing process. The committee chair finished the manuscript after extensively reanalyzing the data.

Case 2

An undergraduate student asked a psychology member to supervise an honors thesis. The student proposed a topic, the faculty member primarily developed the research methodology, the student collected and entered the data, the faculty member conducted the statistical analyses, and the student used part of the analyses for the thesis. The student wrote the thesis under very close supervision by the faculty member. After the honors thesis was completed, the faculty member decided that data from the entire project were sufficiently interesting to

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warrant publication as a unit. Because the student did not have the skills necessary to write the entire study for a scientific journal, the faculty member did so. The student's thesis contained approximately one third of the material presented in the article.

Case 3

A psychologist and psychiatrist collaborated on a study. A student who was seeking an empirical project for a master's thesis was brought into the investigation after the design was developed. The student was given several articles in the content area, found additional relevant literature, collected and analyzed some of the data, and wrote the thesis under the supervision of the psychologist. After the thesis was completed, certain portions of the study, which required additional data analyses, were written for publication by the psychologist and the psychiatrist. The student was not asked to contribute to writing the journal article.

Case 4

An undergraduate student completed an honors thesis under the supervision of a psychology faculty member. The student chose the thesis topic and took initiative in exploring extant measures. Because no suitable instruments were found, the student and the faculty member jointly developed a measure. The student collected and entered the data. The faculty member conducted the statistical analyses. The student wrote the thesis with the faculty member's guidance, and few revisions were required. Because the student lacked the skills to rewrite the thesis as a journal article, the faculty member wrote the article and the student was listed as first author. Based on reviewers' comments to the first draft of the manuscript, aspects of the study not included in the thesis needed to be integrated into a major revision of the manuscript.

Available Guidelines for Determining Authorship Credit and Order

In each of the four hypothetical cases described above, decisions regarding authorship credit and order were required. Until the last decade, there were few published guidelines that provided assistance in this decision-making process.

As an initial guideline, the American Psychological Association's (APA's) Ethics Committee (1983) issued a policy statement on authorship of articles based on dissertations. The statement indicated that dissertation supervisors should be included as authors on such articles only when they made "substantial contributions" to the study. In such instances, only second authorship was appropriate for the supervisor because first authorship was reserved for the student. The policy also suggested that agreements regarding authorship be made before the article was written.

This policy statement was important because it recognized that dissertations, by definition, represent original and independent work by the student. Given the creative

nature of the student's dissertation, an article that he or she writes based on that dissertation should have the student identified as first author. The faculty supervisor, at most, deserves second authorship.

Although this policy statement was helpful, it did not clearly define the key term *substantial contributions*. Furthermore, because the policy statement applied only to dissertation research, it did not provide guidance for faculty who engaged in collaborative projects with students outside of dissertations.

Current guidelines for making decisions regarding authorship credit and order are presented in the APA *Ethical Principles of Psychologists and Code of Conduct* (1992), which supersedes the 1983 policy. The APA code has a section relevant to the determination of authorship on scholarly publications. Section 6.23, Publication Credit, states

- (a) Psychologists take responsibility and credit, including authorship credit, only for work they have actually performed or to which they have contributed.
- (b) Principal authorship and other publication credits accurately reflect the relative scientific or professional contributions of the individuals involved, regardless of their relative status. Mere possession of an institutional position, such as Department Chair, does not justify authorship credit. Minor contributions to the research or to the writing for publication are appropriately acknowledged, such as in footnotes or in an introductory statement.
- (c) A student is usually listed as principal author on any multiple-authored article that is based primarily on the student's dissertation or thesis.

Although this section is clearer and more detailed than the comparable section in previous versions of the *Ethical Principles of Psychologists*, it fails to provide comprehensive guidance to faculty who publish with students. In particular, terms such as *professional contribution* and *minor contribution* are unclear and, as a result, are open to different interpretations (Keith-Spiegel & Koocher, 1985). In the absence of clear guidelines regarding authorship credit and authorship order on faculty-student collaborative publications, disagreements may occur, and one or both parties may feel exploited.

Ethical Issues Involved in Determining Authorship Credit and Order on Faculty-Student Collaborative Projects

The ethical dilemmas that arise when faculty collaborate with students on work worthy of publication stem from the unique nature of the faculty-student relationship. Although collaboration between two professionals can occur on an egalitarian basis, collaboration between faculty and their students is inherently unequal. By nature of their degrees, credentials, expertise, and experience, many faculty supervise students. Supervisors are responsible not only for facilitating the growth and development of supervisees but also for portraying supervisees' abilities accurately to others. For example, faculty may write letters of recommendation for their supervisees, evaluate their work, assign grades, or give critical feedback to represen-

tatives of their undergraduate or graduate programs. Thus, faculty who function as supervisors must balance the potentially competing duties of fostering the growth of their trainees and presenting them to others in a fair and accurate manner.

We believe that there are two potential ethical dilemmas in faculty–student collaborations. The first dilemma arises when faculty take authorship credit that was earned by the student. Many of the authorship-related critical incidents identified in the Goodyear et al. (1992) and Costa and Gatz (1992) studies concerned faculty taking a level of authorship credit that was not deserved and not giving students appropriate credit. As one might expect, Tabachnick, Keith-Spiegel, and Pope (1991) found that faculty respondents perceived “accepting undeserved authorship on a student’s published paper” as unethical.

The second dilemma occurs when students are granted undeserved authorship credit. There are three reasons why this dilemma is an ethical one. First, a publication on one’s record that is not legitimately earned may falsely represent the individual’s scholarly expertise. Second, if, because he or she is now a published author, the student is perceived as being more skilled than a peer who is not published, the student is given an unfair advantage professionally. Finally, if the student is perceived to have a level of competence that he or she does not actually have, he or she will be expected to accomplish tasks that may be outside the student’s range of expertise.

How often do faculty give students the benefit of the doubt with respect to authorship on collaborative publications? Although we are aware of many instances when supervisors engaged in this practice, systematic empirical evidence related to the prevalence of this practice is rare. Twenty years ago, Over and Smallman (1973) found that “distinguished psychologists” had reduced rates of first-authored papers in the years following receipt of APA Scientific Contribution Awards. Zuckerman (1968) had similar findings in a study of Nobel laureates. Recently, Costa and Gatz (1992), in a survey of faculty and students asked to assign publication credit in hypothetical dissertation scenarios, found that higher academic rank and more teaching experience were positively related to faculty giving students more authorship credit.

One explanation of this positive relation between faculty experience and granting students high levels of authorship credit is that senior faculty are more likely than junior faculty to be sought after for research consultation by students and new faculty. However, it is also possible that they may be more generous—perhaps overly so—in granting students authorship because publication pressures have lessened for them. Interestingly, Costa and Gatz found that faculty were more likely than students to give the student authorship credit in the hypothetical scenarios.

Ethical Principles in Determining Authorship Credit and Order on Faculty–Student Collaborative Projects

Three ethical principles are relevant to ethical dilemmas that arise with regard to authorship on faculty–student

collaborative projects: beneficence, justice, and parentalism. These principles, from which ethical codes (e.g., the *Ethical Principles of Psychologists and Code of Conduct*) are developed, may provide guidance when the codes themselves are inadequate (Kitchener, 1984).

To be beneficent is “to abstain from injuring others and to help others further their important and legitimate interests, largely by preventing or removing possible harms” (Beauchamp & Walters, 1982, p. 28). In the context of the authorship issue, *beneficence* implies that supervisors should help students further their careers by including them as authors when their contributions are professional in nature. In our opinion, to avoid harming students and others in the long run, beneficence implies that faculty should grant students authorship credit and first author status only when they are deserved.

Justice—the second ethical principle—refers to the ethical duty to treat others fairly and to give them what they deserve: “An individual has been treated justly when he has been given what he or she is due or owed, what he or she deserves or can legitimately claim” (Beauchamp & Walters, 1982, p. 30). The principle of justice is often interpreted to infer that one should treat another unequally only if there is a morally relevant difference between them (Beauchamp & Walters, 1982). In the authorship setting, if students are not considered to be meaningfully different from professional colleagues, then they should be awarded authorship credit and order on the same basis as those of nonstudent colleagues. However, if one makes the contrasting assumption that students have less power and competence than nonstudent collaborators, then justice would be served by giving students differential treatment.

Parentalism—the final ethical principle—refers to “treatment that restricts the liberty of individuals, without their consent, where the justification for such action is either the prevention of some harm they might do to themselves or the production of some benefit they might not otherwise secure” (Beauchamp & Walters, 1982, p. 38). Parentalistic actions are generally considered to be most appropriate when they are directed toward persons who are nonautonomous (i.e., lack the capacity for self-determination; Beauchamp & Walters, 1982). Thus, the appropriateness of parentalistic behavior in the authorship context depends on the student’s level of autonomy.

A supervisor who is acting parentalistically might alone decide the level of authorship credit a student receives. Even if students are consulted in the decision-making process, supervisors may use their power to influence the nature of the decision and discount student input. Parentalism is also relevant to the issue of when authorship credit is decided. When the supervisor makes the decision after the work is completed, the student makes his or her contributions without knowing the extent of authorship that he or she will receive. Thus, even when the supervisor does not consult the student in the decision-making process, later decisions are more parentalistic than those rendered before the work has been completed.

Recommendations for Determining Authorship Credit and Order

How do the principles of beneficence, justice, and parentalism, in aggregate, provide guidance in determining authorship credit and order? To answer this question, we argue that two separate aspects of the authorship determination procedure need to be considered: (a) the process of how collaborators decide who will receive a given level of authorship credit for specified professional contributions and (b) the outcome resulting from the decision-making process. In this section, recommendations in each of these two areas are proposed.

Process Recommendations

As noted earlier, the principle of justice dictates that supervisors should treat students unequally only if there is a meaningful difference between them. With particular reference to the authorship decision-making process, we argue that faculty and students are not meaningfully different because faculty and students—particularly graduate students—have the autonomy, rationality, problem-solving ability, and fairness to mutually decide on authorship credit. Therefore, we propose that both faculty and students should have the opportunity to participate in the process of determining authorship credit. In addition, we argue that it is inappropriate for supervisors to assume a parentalistic stance in this process.

Our position should not be misinterpreted to indicate that faculty and students are equals in power, status, competence, and expertise. There are typically substantial differences between them in these areas. Rather, we believe that faculty and students are both sufficiently autonomous to mutually decide on what level of authorship credit will be awarded to each collaborator for specified professional contributions.

Several specific recommendations follow from the proposition that both faculty and students should meaningfully participate in the authorship decision-making process:

1. Early in the collaborative endeavor, the supervisor should provide the student with information related to how authorship decisions are made, the nature of professional and nonprofessional contributions to publications, the meaning of authorship credit and order, and the importance of both parties agreeing on what contributions will be expected of each collaborator for a given level of authorship credit. This information will provide the student with the knowledge necessary to exercise his or her autonomy and to choose whether to participate in the authorship determination process.

2. The supervisor and student should assess the specific abilities of each party, the tasks required to complete the scholarly publication, the extent of supervision required, and appropriate expectations for what each collaborator can reasonably contribute to the project.

3. On the basis of this assessment, the collaborators should discuss and agree on what tasks, contributions, and efforts are required of both parties to warrant au-

thorship and to determine the order of authorship (Shawchuck, Fatis, & Breitenstein, 1986). Although they will not prevent disagreements from arising, such discussions may reduce their likelihood.

This recommendation is consistent with the notion of informed consent, which governs the development of agreements between psychologists and clients and between researchers and participants (Keith-Spiegel & Koocher, 1985). If authorship expectations are clearly established and agreed on early in the collaborative process, both the supervisor and the student have given their informed consent to participate in the project (Goodyear et al., 1992).

Although we are not necessarily advocating the use of signed informed consent forms, we see nothing in principle that would argue against their use. After all, written consent agreements are often developed by therapists and clients, researchers and subjects, and professors and students engaged in independent studies. In fact, in a similar vein, APA has considered requiring authors of submitted papers to include an "authorship paper," which would require authors to agree in writing to the use of their name on the paper and to the placement of their name in the listing of authors (Landers, 1988). If such forms are not used, we advocate making the agreement as clear as possible.

It should be recognized that some students may choose not to participate in the authorship decision-making process and may defer to the supervisor. As long as the student has been provided with sufficient information regarding authorship-related issues and has been encouraged to participate in this process, we believe that the student's choice should be respected. In such cases, the supervisor may appropriately make decisions regarding authorship credit and order without student input.

4. Agreements regarding authorship credit and order may need to be renegotiated for two reasons. First, scholarly projects often take unexpected turns that necessitate changes in initial agreements made in good faith. Second, many manuscripts need to be revised substantially before they are accepted for publication. These revisions may require additional professional contributions beyond those necessary for the completion of the initial draft of the manuscript. Thus, when such revisions are required, the supervisor and student should reexamine their original agreement and determine whether it needs to be modified.

Outcome Recommendations

We argue that the principles of beneficence and justice justify the use of a "relative standard" for determining authorship credit. According to this stance, there should be a varying standard for the level of professional contribution that is required to attain a given level of authorship credit. Because collaborators differ in their scholarly expertise, their competence to contribute professionally to scholarly publications should be viewed as lying along a continuum. On one end of the continuum are collaborators who have limited competence in scholarly activities and who require intensive supervision. On

the other end are collaborators who have considerable competence in scholarly endeavors and who function independently.

On the basis of the principle of justice, we advance the potentially controversial position that the level of contribution expected of a collaborator should depend on where he or she falls on this competence continuum. For the same level of authorship credit, one should expect greater professional contributions from collaborators who have more competence than from those who have less competence. When those who initially had less competence increase their levels of expertise, they should be expected to make more substantial professional contributions for the same level of authorship credit. This is consistent with the generative aspect of faculty-student collaboration—to provide students with experiences that will eventually allow them to conduct independent scholarship and to assist future students.

Where do students fall on the competence continuum? Of course students, as a group, are less competent in scholarly endeavors than faculty are. However, there are important individual differences in students' abilities. Some students function quite independently and have considerable talent in one or more areas related to scholarly activity. Others have less expertise and require intensive supervision. The key implication of this position is that, for the same level of authorship credit, justice is served by expecting relatively less of less competent collaborators than of more competent ones.

For example, a senior faculty member engaged in a collaborative project with an undergraduate psychology major should be expected to make more complex data analysis decisions than the student. However, if the student participated in the development of the research design, in the process of making data analysis decisions, and in the interpretation of the findings, within the limits of the student's limited expertise, his or her contributions should be considered professional and should be recognized with authorship credit. As the student's competence grows with increased coursework and experience, he or she should be expected to make greater contributions for the same level of authorship credit.

Therefore, we propose that faculty and students use a relative standard to determine authorship credit and order. However, we underscore the important point that in all cases when students are granted authorship, their contributions must be professional in nature. Our operational definition of *professional* is discussed below.

Several specific recommendations follow from the use of a relative standard for determining authorship credit and order:

1. To be included as an author on a scholarly publication, a student should, in a cumulative sense, make a professional contribution that is creative and intellectual in nature, that is integral to completion of the paper, and that requires an overarching perspective of the project. Examples of professional contributions include developing the research design, writing portions of the manuscript, integrating diverse theoretical perspectives, devel-

oping new conceptual models, designing assessments, contributing to data analysis decisions, and interpreting results (Bridgewater, Bornstein, & Walkenbach, 1981; Spiegel & Keith-Spiegel, 1970). Such tasks as inputting data, carrying out data analyses specified by the supervisor, and typing are not considered professional contributions and may be acknowledged by footnotes to the manuscript (Shawchuck et al., 1986).

Fulfillment of one or two of the professional tasks essential to the completion of a collaborative publication does not necessarily justify authorship. Rather, the supervisor and student—in their discussions early in the collaborative process—must jointly decide what combination of professional activities warrants a given level of authorship credit for both parties. By necessity, there will be some variation in which tasks warrant authorship credit across differing research projects.

Particularly in complex cases, Winston's (1985) weighting schema procedure may be useful in determining which tasks are required for a given level of authorship credit. In this procedure, points are earned for various professional contributions to the scholarly publication. The number of points for each contribution varies depending on its scholarly importance, with research design and report writing assigned the most points. A contributor must earn a certain number of points to earn authorship credit, and the individual with the highest number of points is granted first authorship. This procedure has the advantage of helping all parties involved to carefully examine their respective responsibilities and contributions. However, in our opinion, it cannot be used in all cases because of collaborator differences in scholarly ability and because the importance of various professional tasks differs across projects. With modification (i.e., a weighting of points earned based on each collaborator's level of scholarly competence), it could be appropriate for the relative standard position that we advocate.

2. Authorship decisions should be based on the scholarly importance of the professional contribution and not just the time and effort made (Bridgewater et al., 1981). In our opinion, even if considerable time and effort are spent on a scholarly project, if the aggregate contribution is not judged to be professional by the criteria stated above, authorship should not be granted.

3. Although this may be another controversial position, we believe that authorship decisions should not be affected by whether students or supervisors were paid for their contributions or by their employment status (Bridgewater et al., 1981). In our opinion, it is the nature of the contribution that is made to the article that determines whether authorship credit is warranted and not whether participants received compensation for their efforts. We believe that financial remuneration is not a resource that can serve as a substitute for authorship credit.

4. As is often advocated when psychologists are confronted with ethical dilemmas (Keith-Spiegel & Koocher, 1985), we advise supervisors to consult with colleagues when authorship concerns arise. Furthermore, supervisors should encourage their students to do the same, whether

with faculty or with student peers. With the informal input generated from such consultations, it is possible that new light will be shed on the issues involved and that reasonable and fair authorship agreements will result.

5. If the supervisor and student cannot agree, even after consultations with peers, on their authorship-related decisions, we recommend, as do Goodyear et al. (1992), the establishment of an ad hoc third party arbitration process. Whether this mechanism should be established at the local, state, or national level is unclear. Ethics committees, institutional review boards (IRBs), unbiased professionals (Shawchuck et al., 1986), or departmental committees composed of faculty and students (Goodyear et al., 1992) are possible candidates for such an arbitration mechanism. The important point is that, given that both parties are considered to be equal contributors to this aspect of their work together, disputes need to be settled by outside parties. In such cases, arbitrators may find Winston's (1985) method helpful, because it requires a systematic review of all contributors' scholarly contributions (Shawchuck et al., 1986).

The Four Cases Revisited

In this final section, we return to the four hypothetical cases described at the outset of the article. First, we present our views on when authorship discussions should take place and then we offer our opinions regarding what authorship decisions are defensible in each case.

In Case 1, the discussion regarding authorship credit and order should ideally have taken place during the development of the thesis proposal but should certainly have occurred after the decision was made to attempt to publish the results. The clinical supervisor should also have been included in these deliberations. Similarly, in Cases 2 and 4, the discussion should have occurred during the initial stages of planning the honors project and no later than when the decision was made to submit a version of the thesis to a peer-reviewed journal. In Case 3, in addition to there being a need for the psychiatrist and supervisor to form an agreement regarding authorship credit, the student should have been a part of further authorship deliberations when brought into the project. Finally, in Case 4, the student should have been consulted when the revisions recommended by the reviewers were received by the faculty member.

Given the ethical considerations discussed in this article, what authorship decisions seem defensible in these cases? In Case 1, the student deserved authorship given the professional nature of his contribution: He participated in generating the idea, developing the research design, writing the proposal, collecting data, and producing several drafts of a manuscript. The more difficult decision is whether the student deserved first authorship, given that he lost motivation toward the end of the writing process and the paper was finished by the faculty member who served as dissertation committee chair. In our opinion, the appropriateness of the student receiving first authorship depends on whether the collaborators believed that first authorship would be retained by the student if

he did not fulfill the agreed-upon responsibilities. Similarly, the level of authorship credit received by the clinical supervisor depends on the extent to which he made professional contributions to the article as specified in the original agreement.

In Case 2, the student deserved authorship credit given that she generated the topic, participated somewhat in the design of the study, and wrote the paper for her honors project. Does she deserve first authorship? In our opinion, the ethical appropriateness of the student being first author revolves around whether she had the interest, motivation, and skill to expand her honors thesis so as to incorporate the complexity of the entire project. If she had the desire and commitment to do so, and therefore assumed responsibility for most components of the writing task, the supervisor had the ethical obligation to help her through this process and she would be listed as first author. If she had neither the interest nor the inclination to participate in this additional writing task, then it would be ethically appropriate for the supervisor to be identified as first author and the student as second author. In this latter instance, a footnote to the manuscript might be included that indicated that part of the article was based on the student's undergraduate honors thesis.

Case 3 presents a somewhat different dilemma. Did the student's contribution warrant authorship credit? The student did not participate in the generation of the research idea or design, he was given a great deal of assistance in conducting a literature review, and he did not participate in writing the manuscript for possible publication. Therefore, he was lacking in these areas of professional contribution. On the other hand, he gathered some additional literature, participated in some data analysis decisions, and wrote drafts of his thesis. These efforts were professional in nature.

Although further data analyses were conducted by the supervisor and the writing of the manuscript was completed by the supervisor and the psychiatrist, our position is that the student deserved third authorship. Although his participation was minimal, his contributions were, in a cumulative sense, professional. Furthermore, he functioned up to his relatively low level of scholarly competence.

Case 4 underscores the need for supervisors and students to recognize that their agreement may need to be reevaluated as the review process unfolds. The student clearly deserved authorship because she generated the research topic, participated in the design of the study and the development of assessments, and—given her relative inexperience—required surprisingly little supervision. We believe that the student should have been contacted when the reviews were available and should have been given an opportunity to participate in the revision process. If she did so, our position is that she would still deserve first authorship.

Conclusion

Collectively, these cases illustrate the potential complexities involved in determining authorship credit and order

on faculty–student collaborative publications. In addition, they highlight our position that supervisors cannot expect as much from students as from experienced professional colleagues.

We hope that the issues raised, principles reviewed, and recommendations made in this article will help faculty engage in the process of making—in conjunction with their students—appropriate authorship decisions. We encourage faculty to give the appropriate amount of attention to the important issue of authorship through early, thorough, and systematic discussions leading to explicit agreements with their students.

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