

Student-faculty collaborative research: A qualitative study of experiences with authorship determination process

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Abstract:

Mentoring students through collaborative research can be an effective method for cultivating student development as scholars; but negotiating the division of responsibilities and recognition may be difficult due to the inherent complexities of the relationship between collaborators and the research process itself. A national sample of 440 students and faculty in education and social science disciplines described their positive and negative experiences with authorship determination in student–faculty collaborative research. Qualitative analysis of these responses revealed important themes and informed the development of suggestions for articulating authorship to avoid potential difficulties.

Keywords: authorship | collaborative research | mentoring | student development

Article:

The doctor of philosophy degree or PhD is the highest academic designation in the United States education system (United States Department of Education, 2008). Those who earn this degree are charged with the responsibility to contribute new knowledge to their disciplines through research and scholarship (Golde, 2006). Many researchers and educators have suggested mentoring as an effective method for cultivating student development as scholars (e.g., Behar-Horenstein, Roberts, & Dix, 2010; Grooms, Leahy, Thielsen, Pi, & Matrone, 2007; Harris, Freeman, & Aerni, 2009; Koro-Ljungberg & Hayes, 2006; Mullen, 2009; Okech, Astramovich, Johnson, Hoskins, & Rubel, 2006). Mentoring students through collaborative research has the potential to be a rewarding experience for students and faculty, but negotiating the division of responsibilities and recognition may be difficult. As part of a national study of authorship practices in student–faculty research, 440 students and faculty in education and social science disciplines described their positive and negative experiences with such collaborations.

Qualitative analysis of these responses informed the development of recommendations for more effective student–faculty collaborations.

Cultivating New Scholars

Graduate students who aspire to conduct their own research after graduation stand to benefit tremendously from collaborating with faculty on research during graduate study (Endersby, 1996; Harris et al., 2009; Kamler, 2008; Koro-Ljungberg & Hayes, 2006). By including students in research, faculty members provide them an opportunity to be legitimate peripheral participants in the activity that is to become part of their postgraduate professional identities (Lave & Wenger, 1991). Mentoring students via supported and increasingly complex and collegial engagement in research has been suggested as the best practice for cultivating new scholars (Hasrati, 2005; Mullen, 2009; Paglis, Green, & Bauer, 2006; Wester et al., 2009). Faculty who include student collaborators in their research benefit from the added fervor, willingness to work, differing perspectives that students can bring to a project (Endersby, 1996; Koro-Ljungberg & Hayes, 2006) and the opportunity to influence and celebrate the student’s development as a scholar (Johnson, 2003).

In addition to the extra benefits, collaborative research carries extra responsibilities. Scholarly publications serve as a record of intellectual property and suggest research competency and scholarly potential. As such, it is essential to carefully consider the authorship arrangement of publications that result from collaborative research. The number and nature of a faculty member’s authored publications often has a decisive impact on promotion, tenure, and subsequent research funding. Similarly, for students, authored publications may be required for degree program advancement or valuable as evidence of merit for awards and employment. Therefore both student and faculty collaborators have a vested interest in receiving authorship recognition for their work contributed in the collaboration.

Authorship in Student–Faculty Collaborative Research

Determining the appropriate authorship arrangement for student–faculty collaborative work is difficult given the complexities inherent in the research process. Research and scholarly writing are often complicated, long-term ventures. Students may have little experience and knowledge about the research process thus they are unlikely to have accurate expectations. In addition, the decision making process is complicated by the power differential and dual relationships between collaborators. Faculty members have more power in the relationship than do students; therefore the students’ ability to advocate for their interests is limited by the possibility of negative repercussions (Fine & Kurdek, 1993; Geelhoed, Phillips, Fischer, Shpungin, & Gong, 2007; Johnson, 2003; Kitchener, 1992; Nguyen & Nguyen, 2006). Finally, authorship practices seem to vary across and within disciplines (Endersby, 1996); therefore, student and faculty conventions for determining authorship may differ.

Perhaps the most appropriate resources for guidance on how to determine appropriate authorship are the ethical codes of the student or faculty member’s relevant professional associations. For example, the ethical codes of the American Educational Research Association (AERA, 2000), American Counseling Association (ACA, 2005), American Psychological Association

(APA, 2002), and the Association for the Study of Higher Education (ASHE, 2003) include guidelines for recognizing work in collaborative projects. All four of these ethical codes state that individuals should take credit for only their contributions and should always identify significant contributions of others. The ACA and AERA codes of ethics add that faculty members are responsible for ensuring appropriate recognition of students' work, and the ACA code suggests faculty members initiate the discussion about authorship at the beginning of the collaboration. Further, the AERA code of ethics specifies that authorship should be based on intellectual or creative contributions, not clerical or administrative support. This suggestion is echoed in the guidelines for authorship in the publication manual of the American Psychological Association (2010); all substantial contributors should be included as authors and authors should be listed in order of their contribution. These resources offer helpful guidance, however the remaining ambiguity as to what constitutes a substantial intellectual contribution leaves room for disagreement, confusion, and conflict.

In fact, researchers have found that disagreement, confusion, and conflict do occur among collaborators. Four studies of psychologists revealed ethical dilemmas related to authorship (Fine & Kurdek, 1993; Geelhoed et al., 2007; Pope & Vetter, 1992; Sandler & Russell, 2005). In a qualitative study of social work faculty members and doctoral students Netting and Nichols-Casebolt (1997) found that faculty and students did not know the correct way to determine authorship order and doctoral students reported receiving little guidance from faculty about how to negotiate authorship decisions. Spiegel and Keith-Spiegel (1970) and Welfare and Sackett (2010) found a lack of consensus among respondents' perceptions of the correct authorship arrangement for articles resulting from a dissertation or class project. In sum, disagreement, confusion, and conflict in collaborative research have been well-documented over the last four decades.

Given the prevalence of these issues, discussing and deciding on a plan for authorship before writing begins is frequently recommended (e.g., ACA, 2005; Apgar & Congress, 2005; Fine & Kurdek, 1993; Geelhoed et al., 2007; Goodyear, Crego, & Johnston, 1992; Netting & Nichols-Casebolt, 1997; Robins & Kanowski,). Goodyear et al. (1992) recommended an informed consent process as a strategy for preventing conflicts about authorship. They suggested collaborators work together to develop a written document that delineates expectations, responsibilities, and benefits for each contributor. The authors further suggested a review process at the departmental level to decide on the fairness of authorship credit and order, and to hold all parties accountable. Similarly, Fine and Kurdek (1993) recommended faculty educate students in the early stages of collaboration about the implications of professional and nonprofessional contributions, how authorship will be mutually decided, and the expectations that come with authorship credit. Intentions and expectations of each party should be jointly determined and resulting authorship plan agreed upon. Informed consent allows the student to decide whether or not to participate in the research project based on a complete understanding of the expected input and outcomes. Because projects and roles may change during the writing process, Fine and Kurdek advocated revisiting the agreement throughout the life of the collaboration.

Despite these seemingly clear recommendations, student–faculty collaborative research is complex, and determining appropriate authorship of resulting intellectual products is difficult. The ethical guidelines provide general rules but disagreement, confusion, and conflict remain

common in practice. Faculty members who mentor students through collaborative research need more information about how to navigate the authorship determination process. Complex phenomena such as this one are well-suited for qualitative inquiry (Creswell, 2008). As such, the goal of this study was to explore the remaining areas of ambiguity in student and faculty experiences with collaborative research. By understanding their positive and negative experiences, we may be able to identify why the difficulties continue and what faculty and students could do differently to improve the process.

Methodology

The research questions included in our study follow:

1. How do students and faculty describe their experiences with student–faculty collaborative research?
2. What do students and faculty believe made those experiences positive and/or negative?

Procedure

A purposive sample was obtained using the list of institutions designated as *Very High Research* by the Carnegie Foundation as the sampling frame. Very High Research universities were targeted because of the likelihood of students and faculty having experienced the phenomenon of focus in the study. Of the 96 universities with that designation, 80 had graduate studies in a department, school, or college of education. The department, school, or college of education at many of the universities included some social sciences in the unit (e.g., counseling, school psychology, educational psychology). The sample was limited to students and faculty in education and these related social science disciplines and excluded other disciplines such as biological sciences, engineering, and creative arts to increase consistency in the types of collaborative research conducted by participants. Names and email addresses of four faculty, staff, and student leaders in the education divisions (e.g., dean, executive assistant to the department chair, graduate student organization president, graduate student representative) were obtained from the websites for these 80 universities. The specific titles of the contact people varied by university but three faculty or staff and one student at each university were contacted. An email to each of the four individuals explained the purpose of the study and asked the recipient to share the invitation with students and faculty in their college/school/department. Non-responders were sent a reminder email one week later and a final reminder email two weeks later. Individuals replied to confirm they had shared the invitation to participate. In the final email reminder, non-responders were asked to give a reason if they declined to share the invitation with students and faculty at their school. Overburdened faculty and university policy not to use listervs for research solicitations were the two most frequently cited reasons for declining participation. The invitation to participate explained the purpose of the study and included a link to a secure web-based survey. Data collection was closed eight weeks after the initial invitation. No incentives for participation were provided.

Instrument

The instrument used to collect data in this study was designed by the first and second authors based on a review of the existing authorship literature. Pilot testing was conducted to gather initial evidence of psychometric sufficiency for the instrument. Two faculty members and two doctoral students completed the survey and provided feedback about clarity and completeness of the items. Their feedback informed revisions prior to use in this study. The final survey included seven questions about academic position and demographic classifications, 75 multiple choice and rating questions about authorship practices and perceptions, and one open ended question. Responses to the open-ended question provided the data for this qualitative analysis. The question was “Please describe any experiences, negative or positive, that you have had with student–faculty research collaborations. What, in particular, made those experiences negative or positive?” The complete instrument is available from the first author.

Sample

One thousand three hundred and thirty-four students and faculty responded to the survey. Of those, 513 responded to the open-ended item (821 omitted). Of the 513 responses, 73 were not appropriate for coding (e.g., responses of “thank you” or “great survey!” were excluded). As a result, 440 responses were included in this qualitative analysis.

The 440 responses came from 209 faculty (47.5%) and 231 students (52.5%). Of the 209 faculty, 49 (23.4%) were assistant professors, 59 (28.2%) associate professors, 69 (33%) full professors, 9 (4%) research faculty, 4 (2%) clinical faculty, 5 (2.4%) visiting or adjunct faculty, and 14 (6.7%) other types of faculty members (e.g., administrators). The 231 student responses came from 201 (87%) doctoral students, 26 (11.3%) master’s students, and 4 (1.7%) undergraduate students.

Respondents were from various disciplines within education and related social sciences, including counseling/counseling psychology/counselor education ($n = 39$, 8.9%), educational psychology ($n = 60$, 13.6%), educational research/methodology/statistics ($n = 51$, 11.6%), higher education/student development ($n = 57$, 13%), K-12 all subjects and special education ($n = 121$, 27.5%), educational leadership and policy studies ($n = 25$, 5.7%), school psychology ($n = 15$, 3.4%), educational technology ($n = 16$, 3.6%), and other ($n = 56$, 12.7%). Each discipline in the “other” category accounted for less than 3% of the sample and included adult education, health education, social/cultural studies in education, speech–language pathology and more.

Respondents were asked how many student–faculty collaborative projects they had experienced first-hand and how many they have observed. Thirty-one respondents (7%) had not participated directly in a collaborative research project. One hundred and three respondents (23.4%) had participated in one or two collaborative projects; 136 (30.9%) had participated in three to five collaborative projects; 54 (12.3%) had participated in six to eight collaborative projects, and one hundred and fifteen (26.1%) had participated in more than eight collaborations (one participant omitted this item). Almost all of the respondents had observed at least one student-faculty collaboration (none = 9, 2%, 1–2 = 39, 8.9%, 3–5 = 78, 17.7%, 6–8 = 51, 11.6%, >8 = 258, 58.6%, omitted = 5, 1.1%).

Respondents ranged in age from 20- to 87-years-old with the mean age of 41.41 years (17 respondents omitted this item). One hundred and thirty respondents (29.5%) were male and 307 (69.8%) were female (3 respondents omitted this item). Of the 440 respondents, 345 (78.4%) indicated their race/ethnicity as White, 21 (4.8%) Black/African American, 3 (0.7%) American Indian/Alaska Native, 19 (4.3%) Asian, 5 (1.1%) Native Hawaiian or Other Pacific, 25 (5.7%) Hispanic or Latino, 17 (3.9%) multiracial or other, and 5 (1.1%) omitted this item.

Analysis

The 440 responses were analyzed using a constructivist approach to the traditional method of grounded theory (Glaser & Strauss, 1967; Guba & Lincoln, 1994) and NVivo software. The inductive analysis was conducted by our team of three researchers. Each of us reviewed a sample of responses and developed open codes to characterize the participants' experiences. From these codes, we combined, revised, and came to consensus on the initial list of nodes. Nodes were then defined. All data were placed in nodes by consensus. We used a constant comparative method to determine the best fit for each unit of data. Early in the coding process, definitions of nodes were revised, and new nodes were added as needed. After coding all data, participant responses in each node were reviewed to confirm fit.

The five themes that emerged across the student and faculty experiences were "varied nature of collaborations", "communication", "expectations", "inclusion," and "legacy." Nodes were combined in the process of distilling these five themes. For example, we initially categorized positive and negative experiences into separate nodes to match our second research question and understand the participants' experiences at the most specific level possible. In this final phase analysis, we used a deductive process to determine which nodes should be combined. The nodes "ineffective communication" and "effective communication" were combined into a single theme about communication because both types of experiences provided evidence for the recommendations that are supported by this theme. Similarly, nodes about positive and negative experiences with inter-collaborator expectations were combined to form the "expectations" theme and nodes about positive and negative legacy effects were combined to form the "legacy" theme. Three nodes that described problems with workload distribution, collaborator expertise, and collaborator inclusion were combined to the "contribution" and "inclusion" themes because they all described positive and negative experiences with the level and nature of input into the research project. Finally, nodes related ethical concerns, advocacy, collaboration, and the authorship assignment process were combined to form the "varied nature of collaborations" theme because they described a range of types of collaborative experiences, varying from positive to negative, and from mentoring relationships to limited, task-oriented collaborations. All nodes were included in the five themes and the five themes encompass the most salient messages from the data.

We took multiple steps to increase the validity of the inferences drawn from this data, as recommended by Creswell and Miller (2000). First, the researchers considered if the responses were saturated (Patton, 2001). In the process of coding the data into nodes, we noted that no revisions or additions to the nodes were necessary in coding the final 200 responses. This suggests that the categories made sense for the entire sample and that the 440 responses provided an adequate representation of experiences. Second, in order for us and for the readers to

understand the context for the participants' experiences, thick descriptions of each respondent were collected. When describing the sample above, we included university characteristics, academic disciplines, and collaborative research experiences. When describing participant experiences in the results section, student or faculty status was always identified. Participants who were quoted directly were identified by gender, rank/role, and academic discipline in an attempt to provide the reader with context for the experience described in the quote and information needed to determine the applicability of the findings.

In addition to considering the data and participants, we utilized researcher triangulation and reflexivity, to increase the accuracy of the themes (Denzin, 1978). Extensive triangulation was achieved by each of the three researchers first coding a subset of responses separately, then combining and coming to consensus on nodes, then discussing and coming to consensus on the classification for each unit of data, then finalizing the themes that best represent the participant experiences. This triangulation is further strengthened by our consideration of our own beliefs and perspectives as they related to student–faculty collaborative research (Creswell & Miller, 2000). In fact, we were an intentional combination of different perspectives: a teaching faculty member, a doctoral student, and a research library faculty member. The teaching faculty member had previous experience as the student in student–faculty collaborative research and more recent experiences as the faculty member in student–faculty collaborative research. The doctoral student had experience in several collaborative projects with faculty. The research library faculty had experience as a student in student–faculty collaborative research and more recent experiences as the faculty member in a student–faculty collaborative project. By including researchers who mirror the roles of all respondents, the likelihood of lost or overlooked themes was reduced.

Results

Five themes emerged across the student and faculty experiences: “varied nature of collaborations”, “communication”, “expectations”, “inclusion”, and “legacy”. Each theme is reported in the following sections.

Varied Nature of Collaborations

Many of the 440 responses described very influential experiences, positive and negative, with student–faculty collaborative research which fits with the existing literature about the importance of and difficulties inherent in research mentoring. For example, a female professor in curriculum and instruction said, “Mentoring a student into the world of academic publishing is always an honor.” A female educational technology doctoral student said of her mentor, “She pushes me to achieve a level of scholarship that I wouldn’t have reached if I were working independently.” Negative experiences with student–faculty collaborative research were often described by students who provided menial support for little or no recognition without exposure to the complete project. This type of collaboration does not seem to be a mentoring relationship (as described by Hasrati, 2005; Mullen, 2009; Paglis, Green, & Bauer, 2006; Wester et al., 2009); rather, it seems to be a collaboration in which the students serve faculty for the benefit of the faculty without consideration of the learning experience of the student. Indeed, one male educational technology doctoral student described his experience with this type of collaboration

as “academic hazing” and a female doctoral student in curriculum and instruction said she felt “used and abused.” Another female doctoral student in curriculum and instruction said after a negative experience she prefers to work alone rather than “risk being exploited again.” Other students and faculty described experiences where it seems clear ethical guidelines were not followed. Such as, students who were excluded from authorship despite making significant intellectual contributions, individuals who changed authorship without the knowledge of all collaborators, manuscripts or presentations that were submitted without the knowledge of collaborators, and faculty who used power to have undue influence on student work. These experiences echoed similar ethical violations found in the existing literature (Fine & Kurdek, 1993; Geelhoed et al., 2007; Pope & Vetter, 1992; Sandler & Russell, 2005). The wide range of experiences described by the respondents was remarkable and provided evidence that successful and unsuccessful collaborations continue to exist in academe.

Communication

Clear, effective communication between student and faculty collaborators was frequently cited as essential to a successful project, and examples of poor communication demonstrated problems that can result from misunderstandings. Students indicated they were eager to learn about how to determine authorship of collaborative works and appreciated faculty who initiated the discussion early in the partnership. A female doctoral student in curriculum and instruction described her positive experiences when faculty “put the topic out in the open and we have had respectful discussions about these matters.” A female doctoral student in counseling said she “really appreciated her [faculty collaborator’s] level of forthrightness about discussing authorship on our research publications.” A male doctoral student in counseling explained, “It feels like the faculty should take more responsibility for this ongoing conversation to help ensure equity given the inherent power differential of the relationship.” When authorship is not explained and discussed openly, students described feeling frustration, anxiety, and confusion. For example, one male doctoral student, who omitted his discipline, wrote, “Trying to identify the often unwritten and undiscussed conventions and expectations is difficult and uncomfortable.” Another doctoral student, in educational psychology, described her frustration with difficulty understanding the complexity inherent in assigning authorship, “It is not intuitive, but rather so political and such a game that it almost makes me want to throw in the towel.”

Faculty described their strategies for effective communication with student collaborators and shared negative experiences in which poor communication led to disappointment, resentment, and ethical concerns. Many faculty attested to the importance of having a clear initial plan for the collaboration and revisiting the plan often to revise it as needed. A female associate professor of counseling suggested including external resources to explain the rationale for authorship decisions:

I think what contributed to positive outcomes was discussing authorship upfront with the APA manual in hand and outlining clear tasks and responsibilities with associated deadlines and stating upfront that authorship could be revised based on any changes in the initial plan.

An associate professor in higher education said he discusses “all of these matters before the project begins AND when there is any question about credit, I always err on the side of giving more credit rather than less.” The negative experiences with poor communication often described cases of one collaborator deciding authorship or changing authorship without discussing it with the other collaborators. In these cases the student, or sometimes the faculty member, felt frustrated, disappointed, or exploited by the collaborator who did not communicate well.

These positive experiences and recommendations matched much of what is suggested in the ethical codes and previous research (e.g., ACA, 2005; Apgar & Congress, 2005; Fine & Kurdek, 1993; Geelhoed et al., 2007; Goodyear, Crego, & Johnston, 1992; Netting & Nichols-Casebolt, 1997; Robins & Kanowski, 2008). The experiences also revealed that negative experiences continue to occur despite the recommended practices. Some of the rich language used by participants added to our current knowledge by specifying emotional reactions and underlying intentions that may be preventing clearer communication.

Expectations

Participants frequently described their expectations for the student–faculty collaboration. In part, and as described above, the participants emphasized the importance of clear communication about expectations for work contributed and resulting authorship. But there were other important implications beyond communication. Participants described the impact of meeting, exceeding, or failing to meet expectations and the difficulty of knowing what to expect in collaborative research. Fine and Kurdek (1993) suggested that the authorship arrangement be reevaluated throughout the process for just this reason—expectations are not always met and new challenges emerge during any project. These participants provided detailed examples of how complex determining and addressing expectations in practice can be.

Students described negative experiences in which authorship was “offered,” “hinted,” and “dangled” but did not come to fruition. The reasons for unmet expectations were varied. Some described experiences in which they began work on a project and later learned the faculty member would not complete his/her work because of changes in duties, academic appointment, or personal priorities. Others described experiences where they thought they would have the opportunity to contribute in ways that would earn authorship but the faculty member did more work than expected thus their contributions were reduced. Several students described feeling disappointed or frustrated that their contributions of transcribing, collecting data, and other time consuming tasks did not earn them authorship. One male counseling doctoral student explained a problem inherent with unmet expectations, “I do not have a voice for dealing with faculty who do not live up to their agreed upon tasks (extreme time delays, low-quality contributions, etc.).” In addition, many students described positive experiences; in these cases collaborators met expectations as outlined initially or revised and there was consensus about deserved authorship. In some cases it seemed students were pleased with the authorship recognition they were given but were unclear if or how their contributions merited it.

Faculty responses highlighted similar joys and provided additional information about some of the student concerns. Faculty who described positive experiences emphasized their satisfaction when students meet and exceed their expectations. The responses of three female full professors

provided some context for why it is difficult for students to meet expectations. The first professor, in curriculum and instruction, described the difficulty of extended timeline projects in which the student graduates and/or adds additional collaborators. An educational research professor elaborated on this phenomenon:

Students rarely have had experience in writing journal articles, so it is almost always a very time intensive affair that never comes out as expected. It is in many cases an act of generosity on the part of the faculty. Students can't often carry through because of the length of time it takes to write a manuscript, get it accepted, revised, and published.

Finally, an educational leadership professor wrote, "I think the hardest part is helping the student to realize how much work it takes to do the rewriting to address reviewers' comments, often because they've moved on and are now busy with other projects." A male associate professor in curriculum and instruction took responsibility on himself by saying: "The most difficult experiences I have had are when I have overestimated a student's skills or motivation and/or underestimated her/his required commitment (in terms of time, resources, etc.)." It seems some faculty are aware that students may not know what to expect from a research project and have experienced the negative results of unmet expectations.

Contribution and Inclusion

Many students and faculty described the importance of the student being included in as much of the project as possible and students described positive reactions to being able to make a valuable contribution. This finding provided support for previous assertions of the importance of research mentoring (Hasrati, 2005; Mullen, 2009; Paglis, Green, & Bauer, 2006; Wester et al., 2009) and revealed subtle characteristics of the positive and negative experiences. One female doctoral student in curriculum and instruction said, "I think being treated as an equal, though one who needed things explained more, made me feel included in the project and not like an unskilled assistant." Another female doctoral student in curriculum and instruction said:

I am involved in a collaborative project, and from the beginning, it has been clear that my name will appear on any publications and that my voice is important and valued on the research team. I have the sense that this is not a common practice, but it has made research exciting and fun for me, and I think I am more invested in the work as a result.

Students described how helpful it is to be a part of the full research process: planning, data collection, data analysis, writing, and revising. They also described the confidence they gain from positive feedback from faculty. For example, one female master's degree student in higher education said "most important was the fact that he displayed full trust in me as a co-author." Many students said they enjoyed having faculty support while maintaining some autonomy when the project is student-initiated.

Faculty members described their efforts to make students feel included and valued. A male full professor in educational leadership said:

I always try to set up collaborations so that the student does the majority of the work and can take first authorship. But the goal is to have the student learn to stand alone, so I give as little help as the student needs.

A female associate professor in curriculum and instruction described an experience in which she sought the work of a student:

For example, I was writing a paper with a colleague and remembered a student's assigned paper from a previous class. Her paper included an excellent explanation of an important concept we were discussing. I contacted the student and asked if we could use that section of her paper and add her as third author. She was thrilled and readily agreed.

Other faculty responses suggested some faculty think of collaborative research with students as opportunities to learn from each other.

Legacy

The final theme was about the powerful legacy effect that positive and negative experiences seemed to have on faculty participants. This effect has not been described in detail in previous literature and adds considerable weight to the implications of this study. Faculty described the impact of their own experiences as students on their work as faculty. One female associate professor in educational psychology said:

When I was a graduate student, when writing with faculty, I always appreciated being allowed to share my perspective and being viewed as knowledgeable. As a faculty member, when I collaborate with students, I try to let students know that their perspectives are valuable.

Similarly, a male assistant professor in educational psychology described how his positive experiences as a student have led to his commitment of doing the same for his students. "My former advisor was outstanding, and not only always had these conversations early and regularly, but I believe he always fairly listened to my opinion on the subject. I've strived to do the same with my students." The converse effect also was described. "As a student, this process was never modeled effectively for me by the professors I wrote with, which has made it difficult to have authorship discussions with students now that I am in the other role," said a female associate professor in curriculum and instruction. A female associate professor in educational leadership stated: "Because of an unfortunate experience with unclear collaboration as it relates to authorship... I am very clear on the importance of having courageous conversations about authorship from the onset of any research and writing relationship." It seems experience as a student can have a significant impact on how faculty engage in student-faculty research as a faculty member.

Discussion

These respondents described powerful positive and negative experiences with student-faculty collaborative research that confirmed previous findings and extended our understanding of

research collaborations. The variety of experiences was remarkable and required expansion of the initial focus of the study from mentoring via collaborative research to include less involved collaborative research relationships. Many of the positive experiences were from faculty who mentored students through active, supported engagement in all aspects of a research project or from students who have received such mentoring. Many of the negative experiences described students providing clerical or administrative support for faculty research without exposure to the research process or a clear understanding of how their work would be recognized. From the literature review and these findings, it seems clear that mentoring students through collaborative research is a better learning experience for the student, but both types of student–faculty collaborative research occur in academe and both can be improved by process revisions.

Research projects include many menial but necessary tasks. A student, as part of a graduate assistantship or otherwise, may be expected to support the faculty member’s research and as such, may be responsible for completing some of the clerical and administrative tasks. For efficiency, the faculty member may choose to assign the student tasks that can be done without extensive explanation (e.g., entering data, transcribing interviews). One might conceptualize the student not as a mentee but rather an employee, completing work for pay or other benefits. The faculty member structures the collaboration to fit her/his needs and is not necessarily concerned with the student’s learning experience. This type of collaboration is much different from a mentoring relationship in which both student and faculty invest extensive time and energy in a shared project, but may be just as or more common in academe. As such, it is important that faculty and students consider how to effectively navigate authorship assignment in both types of collaborations.

For example, many of the negative experiences described collaborations in which communication was ineffective and expectations were unclear. Previous authors have recommended that to prevent disagreement, confusion, and conflict faculty members should initiate a discussion about responsibilities and recognition early in the collaboration (ACA, 2005; Apgar & Congress, 2005; Fine & Kurdek, 1993; Geelhoed, et al., 2007; Goodyear et al., 1992; Netting & Nichols-Casebolt, 1997; Robins & Kanowski, 2008). The experiences of these respondents provided more support for this recommendation and added detail about its importance. Based on these results, faculty should describe the process, timeline, expected challenges, and risks inherent in the project to give students more information on which to base their expectations. The discussion should include a plan for each collaborator’s contributions and resulting authorship status. Utilizing resources such as ethical guidelines and research like this anchors the discussion and provides useful information to both faculty and students. Faculty and students should not assume they understand each other’s expectations or agree on the value of various contributions (Welfare & Sackett, 2010). Faculty should normalize the difficulty of knowing how a project will unfold and plan to revisit the responsibilities and recognition plan regularly.

Communication of Expectations in Limited Collaborations

For limited collaborations in which faculty utilize student support for their research through a graduate assistantship or other arrangement, it remains essential that faculty engage in this discussion. Several of the student respondents described experiences in which they provided

limited support for faculty research and expected to be included as an author because such recognition was implied in some way. Even well-intentioned faculty may be guilty of perpetuating this problem. Subtle inferences, wishful thinking, and overt misunderstandings can all be corrected with a straightforward discussion. For example, in a limited collaboration the faculty member could begin by stating:

I am looking forward to working with you for your graduate assistantship this year. For your first task I have some interviews that need to be transcribed. It is arduous but essential so I appreciate your work on it. I understand you are excited about learning how to do research. Unfortunately, your exposure to this project will be limited to administrative support. That means you will not be included as an author of the article I will write using this data. I hope to include you in more of my research next semester. There might be an opportunity for you to contribute in ways that would merit authorship on another project. We can revisit this possibility at the end of the semester.

The faculty member should invite student questions about research contributions and authorship and provide explanations and resources as needed. The discussion might be difficult in the moment and the student might be disappointed by the message, but both will benefit from mutual understanding of the terms of the collaboration. Any wishful thinking or misperceptions can be corrected before work is done and the transparency lends credibility to the process and helps students understand that professional practices, not politics or games, determine authorship assignment.

Communication of Expectations in Mentoring Relationships

Collaborative research conducted by a mentor and mentee involves a much different type of arrangement. For example, as revealed in the contribution and inclusion theme, students who were exposed to the full research process and were valued as a collaborator benefited tremendously from the experience. Students who felt involved, supported, and respected described very positive reactions and faculty who engaged students in this way enjoyed the process. Of course, a discussion about the responsibilities and recognition for contributions in this type of collaboration would be different from that of the limited arrangement described above. The collaboration is long term and is likely to change course during the project. Also, the collaborators are working on tasks that are more difficult to specify and quantify. The tasks require a cycle of work, reflection, feedback, and revisions. For example, in a partnership where the faculty member initiates a research idea and a student adds new dimensions to the idea and helps determine the best methodology for gathering data, both collaborators have contributed substantially to the project. The resultant study would be based on intellectual contributions of both collaborators, but it may be difficult to recall who, specifically, was responsible for the various ideas and to assess how important each of those ideas was to the eventual value of the study.

Similarly, the writing process often involves multiple drafts of increasing refinement and clarity. Collaborators may have an initial plan for divided responsibilities for writing sections of the manuscript, but after editing and revising the final version could include all authors' input in all sections. These complexities emerged in the respondents' stories of unclear, changing, or

unrealistic expectations. Students may not be familiar with the academic writing process and may expect it is similar to a class assignment that does not include multiple revisions. Perhaps acknowledging these complexities and the reality that the research process is long-term is the best way to start the discussion of authorship when mentoring through collaborative research. Faculty should use examples of their previous research and publishing experiences, including mid-project adjustments, timelines, and challenges. This transparency may increase the accuracy of student expectations and trust in the working relationship. If students understand faculty motives, the common challenges in the long-term research process, and the recommended authorship practices they should be less likely to perceive authorship assignment as mysterious or unfair. They may be more likely to seek faculty feedback when they are confused or concerned and communicate effectively about the ambiguous aspects of the collaboration.

Improving the Authorship Determination Process

Across all of the themes, faculty and students described experiences from their own perspectives and in many cases the faculty and students’ perspectives differed. We wondered if some of the negative experiences described by students occurred because students were expecting or hoping for mentoring and authorship recognition and instead were a part of a limited collaboration. In fact, some of the students described their experiences as bad mentoring. If the student’s negative experience was the result of a misunderstanding about the intended nature of the relationship, improved clarity would be an effective prevention strategy. Because attention to research mentoring has increased in last 15 years, current students may be more likely than past students to expect that any engagement in faculty research should be a mentoring relationship. Faculty must be explicit in defining the terms of a limited partnership at the outset of the collaboration.

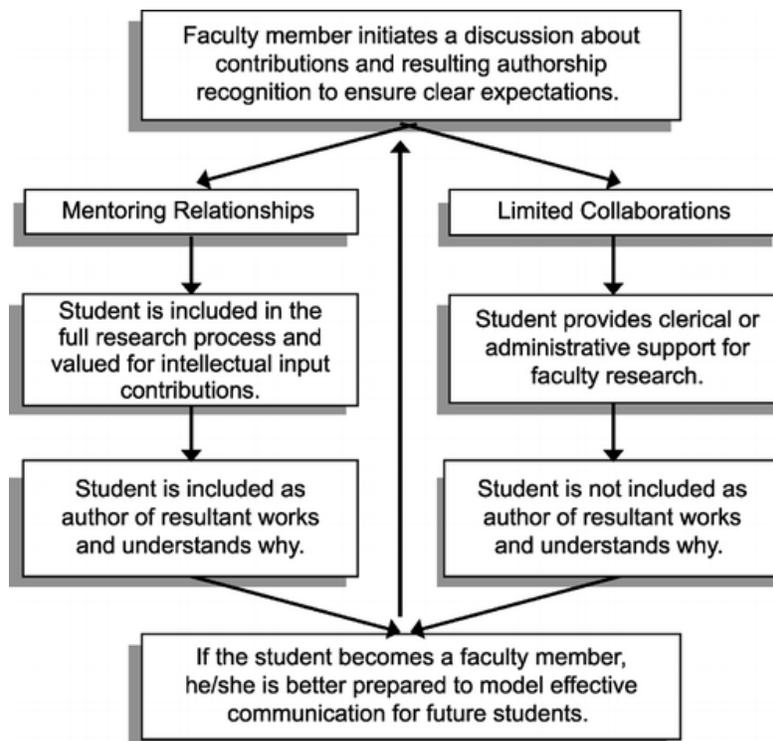


Figure 1 Generative cycle of clear authorship practices in student–faculty collaborative research.

Even in more involved collaborations, student and faculty perspectives seemed to differ. Being more transparent about rationale for authorship decisions and utilizing resources should improve the student's trust in the process despite its inherent complexities and it seems students are eager to engage in that discussion. Because of the new evidence that experiences as a student collaborator might impact methods as a future faculty collaborator, attention to this process is even more important. It seems from these participants' experiences both mentoring relationships and limited collaborations can have this legacy effect. Figure 1 describes the generative cycle that would result from improved practices in authorship assignment in both mentoring relationships and limited collaborations. If students have positive experiences with collaborations during graduate school and go on to become faculty themselves, they will be better prepared to create positive experiences for their future students.

Limitations and Future Research

There are some limitations to consider in interpreting these findings. As in any qualitative research project, it is not clear if the experiences of these respondents are representative of all students and faculty in education and social sciences or students and faculty in other disciplines. Because the respondents chose to answer an open-ended question about their experiences with authorship, it is possible that they are systematically different than those who did not. For example, respondents might have had experiences that are more positive or more negative than usual or feel more passionately about the topic than others. In addition, the participants in the study were students and faculty at "Very High Research" institutions and may not represent individuals at institutions with lower research involvement. Future qualitative research including a series of interviews with student-faculty dyads would yield rich information about their perceptions of the collaborative research and authorship determination process.

Conclusion

Effective communication is necessary to achieve clear expectations about responsibilities and recognition for contributions in student-faculty collaborative research. In both limited collaborations and mentoring relationships, frequent, explicit discussions about authorship are essential. Candid dialogue about the research process and authorship determination, based on informative resources, will produce a new generation of better prepared faculty who can continue that legacy of effective collaborative research with their students.

Notes on Contributors

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