During the last academic year, I have been working with a colleague on The Open Science Collaboration’s Reproducibility Project, a collaborative effort of over 40 institutions examining the reproducibility of articles published in the 2008 editions of the Journal of Experimental Psychology: Learning, Memory, and Cognition, Journal of Personality and Social Psychology, and Psychological Science (Nosek, 2012). A Chronicle of Higher Education article covering this project mentions Rosenthal’s famed file-drawer effect in which nonsignificant or nongroundbreaking findings are relegated the anonymity of the file drawer (Rosenthal, 1969 cited in Bartlett, April 2012). As a faculty member at a small, teaching institution where scholarship is required but not always supported, I was reminded of my own personal version of the file-drawer effect. My students (all undergraduates) regularly produce excellent theoretical and research pieces; unfortunately, these manuscripts are rarely taken any further than a conference presentation.

The experience of presenting and attending a psychology conference is an excellent opportunity for undergraduates. But, when there is a supportive yet rigorous venue like the Psi Chi Journal of Psychological Research, I began to ask myself, “Why aren’t I encouraging my students to publish more?” Grahe et al. (2012) note that there are many reasons why more undergraduate work isn’t published, not the least of which is experimenter error. However, it is troubling that, although greater than 70% of undergraduate psychology programs require research activities, less than 10% of student projects are presented beyond the classroom (Perlman & McCann, 2005).

This year I decided to make a resolution. In many ways, my students and I are already doing the work. My students are writing. I am providing feedback and grading. They are revising. For excellent undergraduate work, the next step should be obvious but is not always easy. Aside from being conscientious about what I am already doing to foster student publication, I realized that I can also be more mindful in my course design with the goal of moving away from a purely apprentice model. Not only should I be assisting in moving projects toward publication but also providing more opportunity for research in the classroom. What follows is advice for both faculty and students about ways to include research in the classroom experience, be a good student candidate for continuing work, and avoid the classroom file-drawer effect.

Faculty
Write Research in as a Course Objective
Though my colleagues and I have a heavy teaching load, we are at a smaller institution where teaching Research Methods or Experimental Psychology as a project-based course is the norm. All students generate (with assistance) an original study on their own or with a partner which they execute during a single semester. This course culminates with a poster presentation at the end of the semester, and, in lieu of a final exam, students complete a call for papers assignment modeled after our regional conference’s call for papers. At the end of the semester, I have 5 to 12 completed call for papers which, depending on their quality, may be submitted to our regional conference the following year. The expectation is created in this course that not only is a project required but also that students think about a potential next step, dissemination. In addition to creating an expectation, the process of applying to a conference is demystified.
Although this approach to Research Methods may not be feasible for all faculty, most psychology classes provide potential for assignments to live beyond the semester. An excellent research proposal could be massaged into a viable experiment. Or, considering the prominence of scientific enquiry and critical thinking in the APA Guidelines for the Undergraduate Psychology Major (APA, 2006), we should be implementing research and critical thinking into all our courses. Why not take advantage of opportunities for idea development, data collection, and scientific writing into our existing courses? In fact, a piece included in the current edition of this journal (Bramesfeld et al., this issue) provides an outstanding example of a research project completed as a service-learning component of a research methods course.

Moreover, Rogers, Kranz, and Ferguson (2012) offer suggestions for including research as a course objective at a Hispanic Serving Institution (HSI). In the course they describe, a mutually beneficial approach allowed researchers to tap into their minority students’ existing relationships as an embedded researcher. Authors were able to access populations typically not represented in research and they also involved more minority students in research activities. Rather than an apprentice model as is traditionally the case, a course that is designed to be half didactic and half research provides opportunity for both faculty and students to maximize the potential of their work. When research is exclusively outside of the classroom, barriers are created for otherwise excellent student researchers—especially commuter, nontraditional and minority students.

Cultivate a Relationship With IRB

As Grahe et al. (2012) and Rogers et al. (2012) identify, a potential obstacle to meaningful undergraduate research in the classroom is the Institutional Review Board (IRB) timeline. Allowing students to generate research questions and design in a class means that one will likely forego approval and thus presentation of the work beyond the course as is the case with some 90% of student projects (Grahe et al., 2012; Perlman & McCann, 2005). Alternatively, an in-class generation of research questions may result in a project that will take longer than a 16-week semester and require significant future commitment from both students and faculty.

To overcome this challenge, Grahe et al. (2012) recommend pursuing topics and methods that qualify for expedited consideration. Moreover, these authors suggest that the classroom is a ripe environment for straightforward replications which may also assist in the recent call for demonstrating replicability in psychology. Further, Rogers et al. (2012) reflected that communicating with IRB early often helps to facilitate the process of including a research project as a course requirement. They suggest a couple of approaches to tackling IRB: (a) a ready-to-go project with IRB approval prior the semester’s start which involves the students very little in the design and hypothesis generation; (b) a blanket approval for an overall project with a pending final approval once the students have generated some of the specifics (in their case, content of interview questions); and (c) very generally, they suggest involving IRB early in the process. The board can and should be a valuable resource and ally in developing students’ understanding of the approval process and research ethics. Faculty are encouraged to develop a relationship with their local board to determine their options, including the possibility of an expedited classroom approval.

Consider a Contract

Whatever approach is taken to involve more students in research and hopefully, publication, it is important that students be aware of the commitment involved. Whether a course culminates in a proposal or completed project there will be a level of commitment beyond the close of the semester in order to advance toward publication. If a course is designed so that a reasonable draft of a manuscript is the end result, both the faculty and the student must consider their ability to continue the work. Students are advised regarding the meaning of authorship below but faculty should also be prepared to have some form of written agreement regarding the outcome of the project. Both parties have contributed to the development of the manuscript and, should the student be unwilling or unable to continue, the faculty member should not have to sacrifice their work. A contract provides many advantages including: (a) setting up the expectation that student work should have a greater purpose, (b) providing a disclosure about the work that may be involved should a student desire publication, (c) allowing the faculty to continue the work with the student’s permission should the student be unable to continue.

In addition to the suggested syllabus contract (see Appendix A) faculty should consider working through Winston’s (1985) worksheet on
determining authorship or West Virginia University’s “Research Responsibilities Checklist” with their student(s) which is available in the APA’s (2006), A Graduate Student’s Guide to Determining Authorship Credit and Authorship Order. See Appendix B for an adapted version of Winston’s (1985) authorship worksheet.

Undergraduate Students
Make Yourself a Candidate for Collaboration Beyond the Classroom
As faculty, interactions begin and impressions are formed in the classroom. Believe it or not, being a bright and talented student are only two characteristics we are looking for in a collaborator. Are you consistently late or missing class? Texting in class? Asking for extensions? We are looking for students who not only produce excellent work but are reliable, engaged, and trustworthy. In my own small department we routinely staff students, discussing their performance, reliability, and even in-class etiquette during department meetings when we are considering them for work study or research positions. The bottom line is that your behavior in class may influence the willingness of faculty to work with you outside of class.

See Your Assignments as More Than Just Assignments
We have all had the class or two that we just endured but, why not be deliberate in your topic choices, diligent in including professor feedback, and plan on taking your work beyond the class in which it was assigned? If your school requires a project-based Research Methods course like mine—plan on a project with future potential. At the least, you should have a goal of taking the project to a conference. Even better, plan to hone and revise your manuscript into a publishable piece. If your school does not require an independent or group research project as part of your undergraduate coursework, keep your eyes open for other opportunities. For example, many upper-level courses require a research proposal. Take this assignment and the opportunity for feedback seriously and then take the next step. A proposal requires you to consider all the elements you will address in an IRB. Be mindful of feasibility when you write a proposal and work with a faculty member to take that proposal to the next step.

Discover the Interests of Your Faculty
Try to determine early whom you share interests with. As you are being deliberate with the completion of major papers and assignments, consider a faculty member who may be willing and able to work with you further. Although this commentary suggests that faculty should look for more opportunities within the classroom, keep in mind that the apprenticeship model of research collaboration is common and you may benefit from seeking out a research mentor.

A few strategies for discovering a mentorship match include: (a) Make an effort to read biographical information available on your department’s website including reviewing any research interest statements or lists of recent publications, (b) attend local Psi Chi offerings such as meet-and-greets and be sure to ask questions, and (c) talk to upper-class students who are participating in research.

Once you have identified a potential mentor, it is important to determine whether that person is a good fit and whether they are willing and able to mentor you. Consider making an appointment to ask the professor if they are accepting research assistants and if there are any current projects you could contribute to. Be sure to also ask about their mentorship style and expectations. Finally, it is important to come prepared if you seek out a meeting. Let the professor know you are serious by preparing questions or perhaps draft specific research ideas.

Understand the Meaning of Authorship
Much has been written on determining authorship and authorship order (e.g. APA, 2010; APA, 2006; Fine & Kurdek, 1993). Ideally, if a student developed the project, executed the research, and wrote the paper, the student should be the primary author. If the paper was conceived and written as part of a course assignment and the faculty member provided guidance and feedback through the conceptualization, design, execution and writing, then that faculty member will have “substantially contributed” (para 8.12 [a], APA, 2010). Students should keep this in mind if they elect to continue work beyond the class and/or seek another mentor to pursue publication. Although it is important to find a mentor that is both willing and able to work with you, it is also crucial to give credit where it is due. Manuscript preparation is a lengthy and time-consuming process. In some situations, a faculty member may take on significant responsibilities related to revision and resubmission. In these cases, it may be appropriate to recognize the faculty member as the first author. These are
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all issues you should be prepared to discuss with your research mentor so that authorship credit is equitably designated. Again, a suggested rubric for determining authorship adapted from Winston (1985) is included (see Appendix B).

Be Honest About Your Ability to Commit
Upon the close of each semester, students and faculty alike experience fatigue and perhaps intellectual burnout. Once you have had some space to overcome the initial exhaustion, consider where you would like to go next with your work. Is the starting point—the end product you submitted—a high-quality piece? Has a faculty member shown interest in or encouraged you to consider continuing the work? If so, are you able to commit? For how long? These are important questions to ask yourself, and be honest about the answers.

I am currently working with a student on a manuscript that has been 5 years in the making. He started out in my Research Methods class, went on to complete an honors thesis, and is now working on revisions in order to submit to a second potential venue. I count myself very fortunate that he has been invested in this project as long as he has. Too often, students overestimate their availability and enthusiasm. Rather than making a promise you can’t keep, really consider how far you are willing to go. If an additional semester or year is not realistic, how do you feel about your mentor taking the project over on your behalf? Finally, keep in mind that you may be eligible for a paid research position, or earn additional credits while you continue the work. Educate yourself on the opportunities that exist at your school for independent research, independent study, or other individualized credits. Sometimes having the structure of a paid position or credit-bearing course helps to keep everyone on track.

Be Aware of the Ramifications
Some graduate school admission committees look at publications first, GPA second. At the very least, research experience has been identified as the highest rated second-order criterion (behind GPA, GRE, and recommendation letters) for acceptance to doctoral programs (Keith-Spiegel, Tabachnick & Spiegel, 1994). The advantages of research experience and especially publication as an undergraduate are many and obvious. Aside from looking great on a graduate school application, having the experience of engaging in research and seeing a project come to fruition as a publication is invaluable. *Eye on Psi Chi* has highlighted the variety of skills and abilities that are developed in this process from collaboration, to attention to detail, to the ability to synthesize many perspectives (Sleigh & Ritzer, 2007).

Alternatively, related to the advice of carefully considering your ability to commit—collaborating closely with faculty may present challenges that a student would not typically confront in the classroom. For example, when you write a paper and your professor provides feedback, there is not always an opportunity to or expectation of implementing the feedback (e.g., on the final draft of your papers). In a collaborative setting, it will be expected that feedback be implemented correctly and in a timely fashion. Also, depending upon the size of the class, it may go unnoticed when a student hasn’t adequately prepared for a discussion. In a one-on-one research meeting, lack of preparation is painfully obvious and a waste of time for all involved. In short, more will be required of you with less opportunity for social loafing. An excellent student may be a terrible collaborator, and fractures in research relationships can bode very poorly for future recommendation letters.

Conclusion
Research experience is an important goal of the undergraduate psychology curriculum. As a discipline, we are meeting these goals in a variety of ways but are less effective when it comes to bringing our students’ work to publication (Perlman & McCann, 2005). Quality journals that judge students’ work based upon their developmental level like *Psi Chi Journal of Psychological Research* provide excellent opportunities for faculty and students to avoid the file-drawer effect. In the coming year, my personal new school-year resolution is to find at least one piece to submit with a student. To meet that goal, I plan on implementing more opportunity for the development of publishable pieces in my current courses and working with students on contracting. Luckily, I have already established a positive working relationship with the IRB chair at my own institution, which I intend to continue.

Considering the call for replication in psychology and the opportunity for student publication, we should all take advantage of this historic time in our discipline. Student and faculty collaboration is a valuable experience for all involved. Both parties benefit from a productive research relationship. Undergraduate publication helps students pave a path to graduate school acceptance by building
critical thinking, reading, and writing skills, in addition to the cultivation of collaborative relationships with faculty. Students are encouraged to consider the qualities that will make them a successful collaborator outside of class in addition to seeking out opportunities to turn their hard work into a publication. As faculty, some of the most rewarding teaching moments occur when we witness our students grow beyond the content of our curriculum and develop into scholars. We should be reconsidering the confines of our class objectives and avoiding our personal file drawers by finding unique ways to support undergraduate publication and take advantage of the work we are all already doing.

References

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Appendix A
Sample Coursework Publication Contract
Following completion of this course, you may be invited by the professor to pursue publication of a manuscript you have created. This may take the form of a conference presentation, publication in a journal, or both.

Should your work be published, you may be listed as the first author with the professor as the second or you may be listed as the second, third, or other author. Authorship depends upon the amount of work you participate in beyond this course. Publication can be a time consuming endeavor and may require several revisions spanning over 3 months to 1 year (or longer, depending on the journal).

Please indicate your consent by initialing below.

Consideration for publication:

Yes, I would like my work to be considered for publication if deemed publishable by the professor.

No, I am not interested in pursuing publication of work related to this course. (If initialed, skip to bottom)

Future availability:

Yes, I anticipate being willing/able to work with the professor on a manuscript beyond the end of the semester.

No, I do not anticipate being willing/able to work on a manuscript beyond the end of the semester.

I am unsure whether I will be willing/able to work on a manuscript beyond the end of the semester.

Permission to publish on behalf of the student:

Regardless of my ability to work on a manuscript beyond the end of the semester, I am comfortable allowing my professor to pursue publication on my behalf, even if I am not listed as the first author.

Please sign below to indicate that you have read the contract and agree to the selections initialed above. Should your willingness to be considered for publication or permission for the professor to publish on your behalf change, the instructor must be notified prior to the end of the semester.

Please note that indicating your willingness to publish or providing permission for the instructor to publish on your behalf does not guarantee publication, nor does it influence the grade you earn in this course.

Signed

Date

Printed Name

Appendix B
Worksheet for Determining Authorship Adapted from Winston (1985)

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<th>Area</th>
<th>Tasks</th>
<th>Value</th>
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</table>

X = Multiplied by hours spend engaged in the task. ÷ = Divided among the potential authors based on relative contribution to the task.