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Project Management Principles for Optimizing Publication Productivity of Mixed Methods Studies

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Abstract

Mixed methods research is increasingly valued, although little attention has been placed on how to execute such projects well to achieve optimal publication for impact. Multiple publications from a single study allow scholars to explicate findings that cannot be contained in a single article and which address different aspects of study findings. This article contributes to the fields of mixed methods research by building on their roots in pragmatism, which we argue calls for effective research studies resulting in published findings. This article proposes a project management framework and describes how to optimize mixed methods manuscript production during each of 5 research phases. We describe lessons learned from project management and implementation of our own mixed methods projects to help research teams build quality projects with optimal publication outputs and impact.

Keywords

Research Design, Data Reporting, Mixed Methods, Qualitative Research, Publication Productivity

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Project Management Principles for Optimizing Publication Productivity of Mixed Methods Studies

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Mixed methods research is increasingly valued, although little attention has been placed on how to execute such projects well to achieve optimal publication for impact. Multiple publications from a single study allow scholars to explicate findings that cannot be contained in a single article and which address different aspects of study findings. This article contributes to the fields of mixed methods research by building on their roots in pragmatism, which we argue calls for effective research studies resulting in published findings. This article proposes a project management framework and describes how to optimize mixed methods manuscript production during each of 5 research phases. We describe lessons learned from project management and implementation of our own mixed methods projects to help research teams build quality projects with optimal publication outputs and impact. Keywords: Research Design, Data Reporting, Mixed Methods, Qualitative Research, Publication Productivity

Mixed methods research is challenging analytically and operationally. Analytical challenges have received the most attention (e.g., Tariq & Woodman, 2013), with less focus on logistical practicalities on how to execute high-quality projects. Limited guidance particularly exists to maximize publication opportunities, a central feature of mixed methods endeavors given (a) the field's roots in pragmatic philosophy (Onwuegbuzie & Corrigan, 2014) and (b) the importance of publications in describing scientific results, facilitating communication among scientists, recording a collective body of knowledge, and contributing to a scientific community (National Research Council, 2003). Mixed methods publications are particularly difficult to achieve, given the volume of diverse data and the accompanying challenges posed to publication norms in terms of article length and type. Drawing upon the project management literature and applying a pragmatic lens, we propose a project management framework to guide the conduct of mixed methods research, including a focus on how to increase research quality and manuscript publications throughout the research process. We also reflect on how mixed methods projects can be designed and executed well, including how to achieve publication success. We view publication success as achieving one's goals in disseminating findings, whether through peer-reviewed journals, other journals, or other means of providing information about findings to stakeholders. We focus on publications because they are the standard dissemination technique in academia.

Mixed Methods and Project Management: Conceptual Framework

Mixed Methods Research as Complex Coordination

In-depth descriptions of mixed methods are discussed elsewhere (e.g., Creswell & Plano Clark, 2006) and we provide only a summary here. We define the purpose of a mixed methods project as one that combines quantitative and qualitative methodologies to solve or answer research questions (Onwuegbuzie & Corrigan, 2014). Qualitative data are open-ended information sources, typically collected via interviews, focus groups, images, document review, and/or observations. Quantitative data are numerical and include information collected using pre-defined instruments, checklists, surveys, and/or records like demographics and medical services. Data types are integrated in mixed methods studies to promote *methodological pluralism*, the thesis that the use of multiple methodological approaches in the course of scientific practice is legitimate (Johnson & Onwuegbuzie, 2004); and to offer a rich, complementary, and comprehensive understanding of research questions and investigated topics (Creswell & Plano Clark, 2006; Teddlie & Tashakkori, 2009). Indeed, this value added perspective implies that *quality* mixed methods studies leverage and integrate diverse methods to produce deep and broad knowledge that could not have been found if the methods had been used individually (Wisdom, Cavaleri, Onwuegbuzie, & Green, 2012).

Mixed methods projects offer advantages over single (i.e., mono-method) approach designs for complex topics that lend themselves to qualitative and quantitative research questions. Mixed methods projects, however, are resource intensive, and require complex coordination. Like all research, mixed methods undertakings include multiple phases (e.g., design, data collection and analysis; write up, and dissemination). However, in mixed methods endeavors, each stage of the project relies on the integration and coordination of design elements and findings collected by different individuals with complementary, diverse expertise (Teddlie & Tashakkori, 2009; Whitley, 2007). This teamwork is not always straightforward; in particular, O’Cathain, Murphy, and Nicholl (2008) note the potential for *dysfunction* to ensue. Further, mixed methods studies tend to be more costly (Niglas, 2004) due to numerous personnel and their activities, and the time needed to develop integrated study designs and proposals, train interdisciplinary teams, and hold regular planning and operational meetings (NIH Office of Behavioral and Social Sciences, 2018). Mixed methods studies also tend to yield more information than do mono-method studies and, as a result, manuscript production is relatively more challenging. Findings must be parsed into multiple discrete articles, necessitating the coordination of a high volume of outputs (Stange, Crabtree, & Miller, 2006). As with all studies, mixed methods study teams contend with funders and researchers’ institutions that might expect researchers to publish findings for different audiences (e.g., in clinical, policy, and methodological journals). Researchers also might need to meet dissemination standards within their disciplines (e.g., education, psychology). Molina-Azorin (2011) justifies integrated data publications by finding that they receive more citations than do mono-method studies. Such publications are essential but given the analytic and operational coordination, they can be challenging to achieve.

Despite the importance and challenges of mixed methods research, practical published guidance within the mixed methods literature is limited on how to set up and manage such projects (Levitt et al., 2018), particularly on how to maximize manuscript productivity. This lack of guidance is particularly glaring given the basis of mixed methods research in pragmatism in its various forms (Biesta, 2010), such as pragmatism-of-the-middle philosophy (Johnson & Onwuegbuzie, 2004), pragmatism-of-the-right philosophy (Putnam, 2002; Rescher, 2000), pragmatism-of-the-left philosophy (Maxcy, 2003; Rorty, 1991). A pragmatic approach is one that maximizes research towards its empirical and practical consequences

(Johnson & Onwuegbuzie, 2004). For mixed methods studies to attain ideal standards of research quality, pragmatism guides us to focus on research activities that operationalize effective design, implementation, and especially outcomes (including publications) in the service of impact. It also begs us to integrate, rather than separate, publication from design and execution phases of mixed methods studies (Leech, Onwuegbuzie, & Combs, 2011). Conceptualization of an effective mixed methods design is neither impactful nor pragmatic in the absence of processes to bring the study to fruition and to share the integrated findings (stemming from the quantitative and qualitative phases of the study) with appropriate audiences, who often are only familiar with mono-method research (i.e., either qualitative research or quantitative research). Similarly, imprecise or misguided project management leads to low-quality research and lower likelihood of publication, especially for the more complex and complicated research problems—including *wicked problems*, which refer to “problems involving multiple interacting systems, replete with social and institutional uncertainties, for which there is no certainty about their nature and solutions, and for which time is running out to find solutions” (Mertens et al., 2016, p. 225)—that particularly lend themselves to mixed methods research approaches. Given the growing popularity of mixed methods approaches and the challenges outlined, we offer a mixed methods research project management framework to organize and implement effective (and higher quality) mixed methods projects to increase publication quality and acceptance rates, and, therefore, increase the likelihood that the findings can lead to real-world changes.

This paper provides insight from mixed methods researchers with experience in academia or academia-adjacent settings: a medical anthropologist (A.B.-L.) who worked in academic public health and is now conducting research at a Veterans Health Administration medical center; an educator (A.J.O.) who works as a senior research associate in the Faculty of Education at the University of Cambridge, a Distinguished Visiting Professor at the University of Johannesburg, a Honorary Professor at the University of South Africa, a Visiting Senior Scholar at St. John’s University, New York, and a Honorary Recognised Supervisor (Online) in the School of Histories, Languages and Cultures at the University of Liverpool; and a clinical psychologist/health services researcher (J.P.W.) who has worked in academic medical centers and schools of public health and who now works as an independent consultant with health care organizations. These disciplines and settings vary widely in expectations for publication of research findings; some settings have expectations for publishing only in peer-reviewed journals. We also appreciate that many others conduct research for real-world impact and are less focused on publications, instead ensuring findings are disseminated to the community and to local stakeholders. Regardless of one’s emphasis on publication, project management techniques can optimize production of products to disseminate findings.

Project Management to Optimize Mixed Methods Projects

Project management is the application of knowledge, skills, and strategies to execute projects effectively and efficiently (Project Management Institute, 2011). Like mixed methods research, project management is also consistent with pragmatism because it promotes tools to answer questions, find meaningful solutions, and identify next steps. It provides structure to complex endeavors using planning, organizing, securing, and managing human and material resources. Project management adds to the operationalization of mixed methods projects by emphasizing the importance of leadership competencies to enhance the likelihood of project completion.

The use of a project management framework facilitates the development of productive mixed methods research processes. The five stages of successful project management (Snelling, 2011), overlaid onto mixed methods research projects are: (a) *Plan*, (b) *Organize*,

(c) *Review*, (d) *Coordinate*, and (e) *Disseminate*. A summary (See Table 1) and activities at each stage are presented in the following sections.

(1) Plan to Design and Implement a Mixed Methods Study (with Publications in Mind) “Begin with the end in mind.” –Stephen Covey. Quality mixed methods manuscripts begin by planning and conducting a well-conceived study (Onwuegbuzie, Leech, & Collins, 2010). The first aspect of planning is to develop the study’s goals, purposes, and key research questions. This might be more challenging than in some mono-method projects due to: (a) the need to develop a comprehensive picture of a topic served by both qualitative and quantitative approaches; and (b) the integration of both qualitative and quantitative methods in a single study to increase breadth and depth of understanding (Johnson, Onwuegbuzie, & Turner, 2007). Facilitation of a disciplinarily diverse team of experts will be needed to undertake literature reviews and devise conceptual and analytic strategies that build upon past discoveries across academic disciplines (Teddle & Tashakkori, 2009), as well as exploring quality methodology for accurate and meaningful assessment and measurement. During group planning sessions, each expert should be invited to bring his/her situated knowledge and experiences to construct a holistic strategy. For example, the Study of Transitions and Recovery Strategies (STARS: Green et al., 2008; Green et al., 2013; J.P.W. was a member of this team) addressed recovery among individuals with serious mental illness and included a sociologist, anthropologist, social workers, clinical psychologist, statisticians, and an advisory group of individuals with lived experience of mental illness. Together, input was considered from these multiple perspectives.

A second activity of the team is to assess the interests and goals of the Principal Investigator(s) (PI[s]), project leads, team members, the funder, and other stakeholders, including involved community members (Sosulski & Lawrence, 2008). Researchers’ interests may include considering whether the project fits into their institution’s goals, their career stage, and professional trajectory. A collaborative strategy can address gaps in current knowledge combined with stakeholders’ interests and concerns to maximize relevance of, support for, and impact of the project (Coulehan & Wells, 2009) while increasing methodological quality.

Research projects, including mixed methods projects, are almost always undertaken by teams, with at least three members (Onwuegbuzie et al., 2018) who have requisite experiences and expertise to achieve research goals. Each team member must have clear roles and responsibilities in research planning, implementation, analysis, and writing. Individuals will likely play multiple roles (e.g., qualitative lead, lead on specific manuscript) and carry out multiple responsibilities (e.g., data collection, analysis) including as a lead or a coordinator (Fetters, 2018). The team should consider at what level its members plan to work together. Rosenfield’s taxonomy of collaboration, in which group members define their work either in parallel retaining disciplinary distinctions (i.e., “multidisciplinary”), or in concert wherein frameworks are melded (i.e., “transdisciplinary”) should be discussed and an appropriate model selected (Rosenfield, 1992). The appropriate model should fit the degree and style of methods integration (e.g., analytical triangulation vs. enhancement; see Bryman, 2006). These discussions should be facilitated by an experienced PI who can draw out and coordinate the strengths of the team. The amount of effort it will take each individual involved to undertake, manage, and report on his/her components of the study should be discussed and represented in the proposal with adequate resource allocation. Ensuring the appropriate distribution of effort across the team and its accurate documentation are critical steps to producing high-functioning collaborative environments and ensuring that the expertise from team members is maximized.

During this planning phase, researchers should map out proposed products, with peer-reviewed manuscripts as one type of proposed product (e.g., webinars, lay materials). The target number of publications might not be clear at the outset given the many kinds of manuscripts that can be produced from mixed methods projects and the emergent nature of

findings. In many large mixed methods projects, the project can produce a primary manuscript describing mixed methods findings as well as additional manuscripts that have additional quantitative-only, qualitative-only, or mixed methods findings. For example, the STARS team studied recovery among individuals with serious mental illness in a mixed methods study funded by the National Institute of Mental Health. The team produced two primary mixed methods papers: one on understanding how clinician-patient relationships and relational continuity of care affect recovery from serious mental illness (Green et al., 2008) and another on trajectories of recovery in serious mental illness (Green et al., 2013). The study also produced additional qualitative papers on emergent topics including risk-taking and personal growth in the recovery process (Young, Green, & Estroff, 2015); the role of pets in recovery among individuals with serious mental illness (Wisdom, Saedi, & Green, 2009), and youths' perspectives on serious mental illness (Green, Wisdom, Wolfe, & Firemark, 2012), as well as a quantitative paper on the measure development (Green et al., 2010). This variety of papers was necessary to convey the multiple findings from the single study.

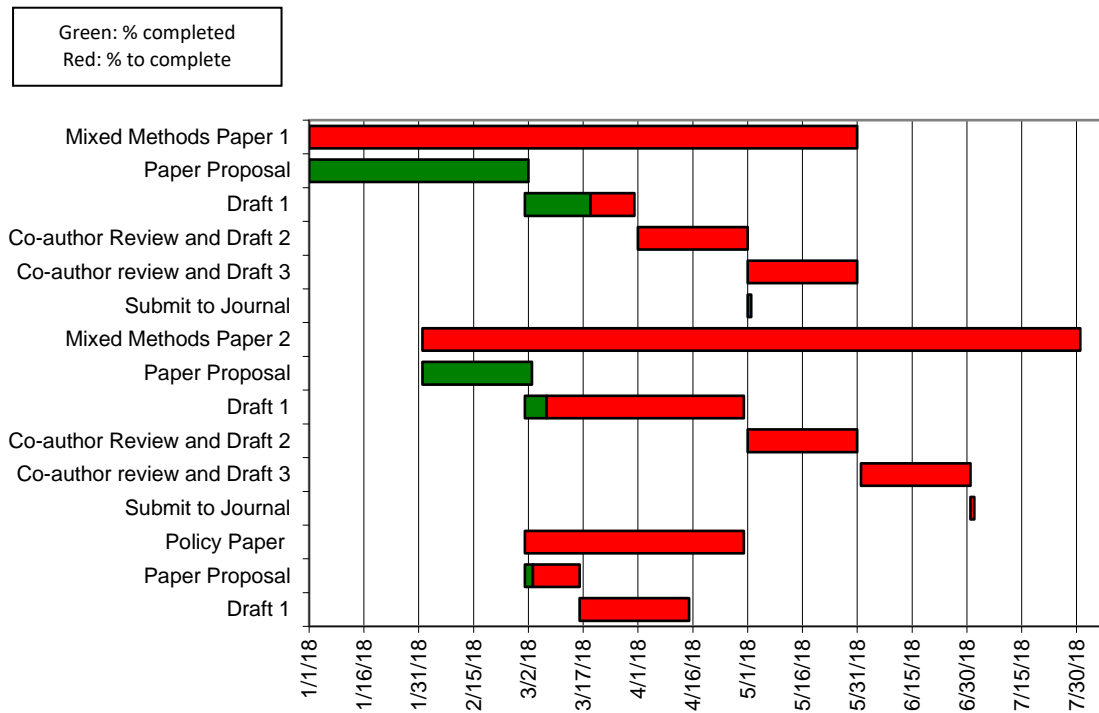
Diverse teams plan dissemination goals together, because the people on the team will invariably influence project success (Cooke-Davis, 2002). Many academic researchers focus on peer reviewed manuscripts, and researchers' disciplinary contexts and varying publication requirements should be discussed to capture the breadth of the team's goals. For example, medical faculty seeking multiple, team-produced publications for clinical audiences should understand the contrasting needs of humanities faculty whose advancement may rely on single- or first-authored articles in nonclinical journals. Similarly, researchers might want to create papers that report outcomes, methodological advances, policy implications, or clinical implications (Fetters, 2018), depending on the nature of the study. Other researchers may be focused primarily on real-world impact, ensuring findings are disseminated to the community and to local stakeholders in ways that do not involve peer reviewed publications. Regardless of individual team members' goals for disseminating products, the team should discuss each individual's goals and how these fit into the overall goals for the project, including sharing authorship appropriately and supporting junior scholars needing primary-authored publications for career advancement. Researchers should balance appropriate dissemination for each project with team members' publication needs.

(2) Organize Tasks (Producing Manuscript Plans and Timelines) “For every minute spent organizing, an hour is earned.” – Benjamin Franklin. Once funding has been achieved, it is important to organize the activities that will need to be completed. This step is often more complicated than in mono-method studies, because there are usually the equivalent of two full mono-method studies to coordinate, which necessitate either a team of researchers consisting of at least one researcher who is competent in qualitative research approaches and at least one researcher who is competent in quantitative research approaches or a team of researchers that consists of researchers with minimum competency in both qualitative and quantitative research traditions, alongside a highly specialized set of competencies in one of these two research traditions (referred to as “the minimum competency model”; Teddlie & Tashakkori, 2003, p. 45). In the case of concurrent methods (e.g., Creswell & Plano Clark, 2006) two types of data collection, analysis, and integration must be scheduled and conducted at the same time. In sequential studies, timelines towards data collection completion are paramount for success. The bulk of team meetings will likely be devoted to planning research activities, and manuscript writing should be included in these plans and timelines.

A highly pragmatic strategy, Gantt Charts display tasks, duration of tasks, responsibilities, milestones, and target dates so that team members share both efforts and products. Gantt Charts can also indicate which tasks are dependent upon or independent of the completion of others and which can be performed concurrently. At this stage, Gantt Charts can assist in planning an overview of multiple manuscript production (See Figure 1). In later

stages, Gantt Charts can be used to build specific workplans for each manuscript. Many free Gantt Chart templates can be downloaded (e.g., www.ganttchart.com).

Figure 1. Complete Papers and Timeline (Gantt Chart Example)



Adapted from <http://asq.org/learn-about-quality/project-planning-tools/overview/gantt-chart.html>

Authorship issues include how the team works on writing tasks, how contributions will be recognized, and how lead and supporting roles are assigned to team members. These issues have both ethical implications of recognizing contributions appropriately, and practical realities of how to best maximize team members’ strengths and provide opportunities for learning. We recommend that authorship is discussed throughout the study with explicit reference to ethics guidelines on authorship from discipline-specific associations (e.g., American Psychological Association, American Education Association) or from consortia such as the International Committee of Medical Journal Editors (icmje.org). It may be useful to allow team members to volunteer to be authors, given their areas of interest, relevance, expertise, and other goals.

Manuscript concepts can be championed by anyone on the team, and these ideas should be notated and reviewed as findings emerge. Each member should consider his/her individual capacity and availability to lead and support writing. It is important to continue to bring out strengths of the team in both skills and available effort (O’Connell, 2011).

Gantt charts can also help ensure that quality issues are addressed. Several models provide detailed guidance to ensure quality of reporting mixed methods studies (Levitt et al., 2018; O’Cathain et al., 2008; Onwuegbuzie & Poth, 2016; Wisdom et al., 2012). These models include, for example, specific criteria to incorporate the justification of using mixed methods, sampling both qualitative and quantitative populations, data collection, ethical review, and data analysis to ensure mixed methods research is reported transparently and accurately. Further, guidance exists for reviewers of mixed methods manuscripts (e.g., Onwuegbuzie & Poth, 2016) and manuscripts generally (Gilliland & Cortina, 2006) that will be helpful for review by authors

prior to submission. As part of planning mixed methods manuscripts, Gantt charts can be useful to explicitly incorporate into the timeline (a) activities to increase the quality of mixed methods manuscripts that might otherwise be overlooked, (b) additional review of methods and manuscripts to ensure all appropriate quality controls are implemented and reported, and (c) additional review of journal criteria and guidance for reviewers to ensure the highest likelihood of journal acceptance.

(3) Review of Data Collection and Management (with Manuscript Plan and Timeline Review) “If the plan doesn’t work, change the plan but never the goal.”-Unknown. As the study progresses into the data collection phase, proposed qualitative, quantitative, and mixed methods manuscripts to describe or illuminate study findings should be carefully considered (Westhues et al., 2008). The unpredictable nature of findings means that new manuscript ideas might emerge or current manuscripts ideas might need to be adapted. These shifts can lead to revising plans and schedules, and they are also exciting opportunities for teams to reflect on novel insights and implications.

Proposed manuscripts and associated workplans and timelines for multiple manuscripts will need to be regularly reviewed and managed to ensure that all activities are on track. The Gantt charts created at the outset should be regarded as living, fluid, and iterative documents. It is helpful to include a column to document the task percentage completed, which can be regularly updated. Some manuscript sections can be drafted early, such as the research framework and methods sections.

Regular meetings—group, subgroup, and individual, depending on the study’s structure and nature of the tasks—should include time to review and discuss manuscript plans. PIs can monitor progress and delegate responsibilities during and between meetings. These meetings likely account for at least 5% of each team member’s effort (O’Connell, 2011) that should be charged to the study’s funding source if appropriate. In the STARS study, the primary project team met weekly, and a full meeting of all researchers including the advisory group met annually to review the past year’s findings, review manuscript ideas and progress, and plan for the coming year.

(4) Coordinate Analyses and Integration (While Beginning to Develop Manuscripts) “Alone we can do so little, together we can do so much.” – Helen Keller. The majority of articles from a mixed methods study should integrate quantitative and qualitative findings in accordance with the research questions, and a coordinated team can together accomplish this large amount of work. In an analysis of articles describing mixed methods findings, Bryman (2007) found that mixed methods designs often resulted in articles reporting quantitative and qualitative components separately, or combining findings “in parallel so that there was more or less no integration at all” (p. 10). Further, Bryman found several underlying difficulties to integration, including organizational and structural problems with the way in which research is designed and managed, bias by the researchers in favor of one data set over the other, and limited mixed methods training. Additionally, the pragmatic problem of page or word limits in many journals precludes the space needed to explain and report findings and integration from multiple methodologies (Creswell et al., 2011).

Concept mapping and integrated data displays are hands-on project management tools that help researchers address these challenges. These tools assist teams to build connections between seemingly unrelated ideas in support of triangulation of, and complementarity between, quantitative and qualitative findings (Wheeldon, 2010). PIs can dedicate team meetings to mapping exercises to help researchers “organize and represent knowledge.” Mapping toolkits can be accessed online and downloaded (e.g., cmap at <https://cmap.ihmc.us>) and can be used inclusively with community members when projects involve non-research specialist stakeholders (Windsor, 2013). In addition to organizing ideas, mapping aids in the production of distinctive, original publications that are also part of a larger body of work.

Laying out the wide array of publications advances the mixed methods typology developed to guide the preparation of manuscripts submitted for publication (Creswell & Tashakkori, 2007) by creating multiple mixed method outputs within the same project.

After using the mapping tools, the Gantt chart and other project management tools should be updated and refined to clarify sequencing and timing of tasks. As described earlier, PIs can guide team members to have the training, availability, and capacities to engage in these group processes.

(5) Disseminate Findings By Writing and Publishing Manuscripts “Arriving at one goal is the starting point to another.” – John Dewey. For mixed methods studies, fully integrating manuscripts into all research design and implementation phases might mean conducting activities to produce mixed methods, qualitative-only, and quantitative-only manuscripts. To more fully move to completing manuscripts for publication, PIs and team members take several additional steps when data collection ends and the focus turns to writing. At this stage, team meetings should focus almost exclusively on manuscript production. A detailed Manuscript Proposal is a useful structuring tool to be completed for each project output. The Manuscript Proposal delineates a title, lead author, list of co-authors, target journal and its specifications, back-up journal(s), draft abstract, brief outline of sections including data sources and analytical methods for each data source, and timelines for completion. These activities can also be tracked on the Gantt chart.

Manuscript Proposals should be submitted to the research team for review. Manuscript Proposal review is also a time for the team to reflect on the overall publication plan and whether it captures all publication opportunities. The team should discuss how to explicitly differentiate the unique purposes, data sources, and analytic contributions of each paper in cover emails to journal editors and in each paper itself; concept maps can be useful in this endeavor. It is useful to explicate how particular papers are related or serve as a subset of a larger mixed methods study during submission (Fetters, 2018), because some journal editors are reluctant to publish anything they might view as duplicative; this is an issue both of ethics and quality.

The identified collaborative strategy (e.g., inter- vs. multi-disciplinary) will guide how study team members write up publications. In some instances, teams will write papers as a collective endeavor; in others, different experts will lead and use the team in a consultative capacity. The team should identify which strategy fits best, and the PI should facilitate group work accordingly.

In some instances, manuscript writing engages outside researchers who bring particular expertise to the process. Mixed methods teams can draw upon their wealth of data and diverse expertise around a particular topic in response to emergent questions in the field (e.g., a paper aimed at a pharmacy audience when the findings that emerge speak well to a particular problem facing that discipline). When these external collaborators appear, they should contribute Manuscript Proposals prior to receiving any data; access to data should be centralized only to those who must view it in order to meet the writing responsibilities (Coulehan & Wells, 2009).

Manuscripts in progress should be shared at meetings for group discussion and feedback of both content and progress per stated timelines. The PI should track submissions to journals and responses, the results of which should be shared openly with the team for discussion. Successful publications should be celebrated by all team members, and the PI should find opportunities to reward and recognize achievements.

It is also important to remember that things do not always go as planned. Contingency plans might include finding alternate journals if the submission is not initially accepted. Revising manuscripts also takes time. The PIs should create processes to individually and collectively review comments and revise manuscripts. Between 10% and 15% of the project schedule, budget, and estimated total work should be allocated for publication efforts (O’Connell, 2011).

Lessons Learned

Each of us has led mixed methods studies and encountered challenges in project management. Here, we describe several key approaches that contributed to our effective use of project management strategies for our studies.

Workload management. Ideally, PIs balance team members' workloads and learning opportunities in a way that leads to project productivity and success. It has been useful to assess genuine time and effort to ensure that team members are not over-burdened, with a deliberative strategy to support and respect everyone's schedule and capacity. In some instances, members of the research team have needed to stagger their efforts, and it is up to the PI to ensure these allocations align with study implementation plans. These assessments of time and effort might also be required for reporting to funders and can be reviewed and managed in project meetings and via the proposed Gantt charts.

Focus on learning. Simple principles of project management, guided by a well-versed leader, can help team members increase their skills in mixed methods research, project management, and leadership. We typically start our studies by identifying the strengths and career advancement needs of each team member. With these strengths and needs in mind, the PI can provide team members with opportunities to learn and practice both research skills (e.g., data collection, manuscript writing) and project management skills (e.g., preparing Gantt charts, facilitating meetings). As team members learn and practice skills, their participation in a study can also build skilled—and published—*mixed methodologists*, who, as the literature suggests (e.g., Bryman, 2007), are very much needed to advance wider mixed methods goals.

Flexibility. One of us worked on a 5-year, mixed methods study with six full and part-time staff who, over the course of the study, had two marriages, one divorce, one graduation, and three babies, not to mention vacations, medical leave, and other actions that kept staff from participating fully in the study. Real-world implementation might also require changes to the timeline and even different methodological strategies given the realities of data availability. Keeping the study on track—flexibly—while life happens and finding ways to support staff while maintaining progress is an enormously positive learning experience and will continue progress toward publications.

Discussion

Publication of research findings is critically important in describing scientific results, facilitating communication among scientists, recording a collective body of knowledge, and contributing to a scientific community (National Research Council, 2003) and should be a goal in mixed methods studies. The mixed methods research project management framework presented here suggests principles and activities to establish and manage study teams, weaving publication discussions and tasks from the outset and throughout the project. Recognizing the time required to execute a complex project is central to successful projects and should be adequately accounted for from the outset. Indeed, mixed methods research project management maximizes leadership in facilitating diverse teams, inviting productive engagements with analytic richness, and being open and flexible given the inevitable unpredictability of the mixed methodological endeavor.

This article discussed the need for and application of a project management framework to undertake the hand-in-hand ventures of creating and disseminating mixed method studies. We drew upon our real-world experiences to highlight the need for attention to workload, learning experiences, and flexibility to demonstrate how specific activities from this framework help facilitate manuscript production and high-quality, coordinated research projects. In some ways, thinking with project management has the potential to create novel, innovative tools

within each project through generating common interests and coordinated methods, which are both concrete and flexible to adjust projects along the way.

In the future, a rigorous study of using the elements of mixed methods research project management in the process of manuscript planning, development, and completion might provide further evidence of best strategies supporting research teams in accomplishing their goals. Future studies can address (a) the utility of different aspects of organization and planning, (b) how different disciplines frame and conduct this process differently, (c) how project management contributes to study quality, (d) how project management techniques contribute to team member satisfaction, and (e) how discussion and decisions about authorship contribute to productivity, and greater utility or consistency with specific worldviews, theoretical approaches, and types of research projects. These strategies for delivering a high volume of publications from a single study can attract funders to mixed methods studies, advancing projects and the overall field.

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Appendix

Table 1. Mixed Methods Study “Pragmatic” Project Management Framework

(1) PLAN	Objective	Build a collaborative strategy to design a mixed methods project that includes dissemination plans. Obtain and protect adequate resources to execute the project.
	Action	<ul style="list-style-type: none"> • Build collaborative and interdisciplinary study team with diverse experience and expertise <ul style="list-style-type: none"> ○ Identify and draw upon knowledge base ○ Identify and build in study team member interests ○ Identify clear roles and responsibilities • Secure appropriate resources and funding to execute the study <ul style="list-style-type: none"> ○ Include realistic effort based on team capacity • Plan Manuscripts <ul style="list-style-type: none"> ○ Identify key audiences, including non-academic and funders ○ Anticipate highest impact for potential findings ○ Satisfy publication needs and interests of each team member ○ Make this step team-based and participatory ○ Include an initial manuscript plan in proposal
(2) ORGANIZE	Objective	Schedule research and publication tasks for project completion feasible within the timeframe, coordinated with study goals, and sequenced appropriately.
	Action	<ul style="list-style-type: none"> • Create a project plan and schedule with timelines for the study <ul style="list-style-type: none"> ○ Observe resource realities; review and adjust as needed ○ Use visual planning tools (e.g., Gantt Charts) • Organize Manuscripts <ul style="list-style-type: none"> ○ Use planning tools (e.g., Gantt Charts) to list manuscripts, responsibilities and timelines ○ Identify sequencing (if paper 1 leads to paper 2) ○ Discuss and decide authorship (early and often) ○ Clarify roles and responsibilities; attempt to distribute leadership and contributing roles as appropriate ○ Integrate manuscript production in overall project plan timeline ○ Continue to develop a collaborative, team-oriented environment
(3) REVIEW	Objective	Manage data collection and monitor the timeline and tasks to maintain or adjust the planned schedule.
	Action	<ul style="list-style-type: none"> • Review and Revise Plans and Timelines <ul style="list-style-type: none"> ○ Assess anticipated time and effort and revise as needed ○ Review initial data ○ Hold regular project meetings • Review Manuscript Plans <ul style="list-style-type: none"> ○ Align study tasks and publication outputs throughout study ○ Revise Gantt Charts, viewing them as ‘living documents’

		<ul style="list-style-type: none"> ○ Identify, document, review, and revise new manuscript ideas ○ Use team meetings to review and reflect ○ Continue to review and clarify authorship, roles and responsibilities ○ Some initial writing may be occurring
(4) COORDINATE	Objective	Ensure consistent communication regarding analysis progress and how interpretation influences team members' writing tasks individuals and collectively. A focal point is building integrated (quantitative plus qualitative) analyses and mapping out papers.
	Actions	<ul style="list-style-type: none"> ● Build Mixed Methods Analyses with Study Team <ul style="list-style-type: none"> ○ Devote adequate time to constructively building integrated analyses ○ Hold group and individual meetings to check-in about issues and concerns arising during study implementation ○ Create and implement tools (e.g., concept mapping, visual displays) to organize difficult concepts and recognize connections between ideas ○ Engage non-research stakeholders in analysis ● Map Manuscripts <ul style="list-style-type: none"> ○ Apply mapping tools to illuminate connections across all papers and expand manuscript areas ○ Review timelines, workplans, and task distribution with increasing focus on dissemination activities ○ Make time to build manuscripts as pertains to emergent manuscripts
(5) DISSEMINATE	Objective	Write intensively. Continue refining publication plans, with an emphasis on dissemination activities.
	Action	<ul style="list-style-type: none"> ● Establish a Dedicated Dissemination Period in Initial Proposal, Reviewed periodically ● Produce Manuscripts <ul style="list-style-type: none"> ○ Maintain team enthusiasm by preparing them for the writing phase ○ Distribute responsibilities related to products ○ Review timelines and authorship for each paper ○ Review overall publication plan using mapping tools ○ Draft paper proposals using a proposal template and review as a team ○ Bring in new authors as needed and specific data access procedures ○ Review and revise papers as a team ○ Establish a journal submissions procedure that includes contingencies ○ Work with funders and other stakeholders to identify additional dissemination activities (e.g., toolkits and best-practice guides, conference presentations, webinars) ○ Celebrate wins as a team!

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