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How Interpretive Qualitative Research Extends Mixed Methods Research

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Recently several authors have criticized mixed methods research because it relegates qualitative research to secondary or auxiliary status, it expresses this status through experimental trials that privilege quantitative research, and it fails to employ critical, interpretive approaches to qualitative research. This paper is a response to this position, and we draw on leading qualitative and feminist researchers who advance the importance of mixed methods research. We also cite empirical mixed methods articles that give priority to qualitative research, as well as mixed methods studies that use critical interpretive approaches. Our overall argument is that qualitative research can enhance mixed methods research, and we give specific examples as illustrations.

Mixed methods research is both a methodology and a method, and it involves collecting, analyzing, and mixing qualitative and quantitative approaches in a single study or a series of studies (Creswell & Plano Clark, in press). Recent critics of this approach to inquiry argue that it largely serves the quantitative community, it relegates qualitative research to secondary status, and it strays too far from the interpretive foundation of qualitative research (Denzin & Lincoln, 2005; Howe, 2004). This thinking might come from the association these writers sometimes appear to make between mixed methods research and the experimental orientation to educational research as discussed in the No Child Left Behind Act (2001) and in the National Research Council (2002) report on the credibility of scientific research in education. This view is a limited, inaccurate, and stereotypic perspective about mixed methods research. Fueling their concerns are also a recent emphasis on "evidenced-based" research in education, and a perceived lack of quantitative training abroad, such as in the UK (Deem, 2002).

This paper is a much-needed response to recent critics of mixed methods research, and a challenge to their stance by suggesting that qualitative research can be prominent in mixed methods research rather than compromised by it. Seen in this way, mixed methods research is compatible with qualitative research, and through mixed methods inquiry, we have a much-needed democraticizing project valuable to inquirers in the social, behavioral, and human science communities. More specifically, we will address three concerns raised by these authors: that mixed methods pushes qualitative research to secondary or auxiliary status, that this secondary status is expressed as an adjunct to a more privileged experimental trial, and that mixed methods research does not employ critical, interpretive approaches to qualitative research. To argue our case, we will draw on several qualitative researchers who advocate for mixed methods research and for the combined use of qualitative and quantitative research. We will cite works by the qualitative researcher, Jennifer Mason (2006), the nursing researcher, Margarete Sandelowski (1996), and the feminist writer, Ann Oakley (1998; 2000). We will also incorporate our own writings (Creswell & Plano Clark, in press; Creswell, Plano Clark, Gutmann, & Hanson, 2003) and provide a review of empirical mixed methods studies that favor qualitative over quantitative research. We begin by reviewing the recent criticism leveled at mixed methods research.

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The Resistance of Qualitative Research to Mixed Methods Research

Kenneth Howe is a philosopher of education in the social foundations of education area at the University of Colorado – Boulder. In a recent issue of *Qualitative Inquiry*, he wrote about the "auxiliary role" (Howe, 2004, p. 52) of qualitative methods in mixed methods research. He views mixed methods as helping strengthen quantitative causal relationships, and the elevation of quantitative-experimental methods to the "top of the methodological hierarchy"

(p. 53). He attributes this to several factors, such as the imposition of external standards; the lobbying by groups such as the Fordham Foundation, the Manhattan Institute, and the Heritage Foundation; the endorsement of randomized trials as the "gold standard;" the backlash to the ideological posturing of researchers who provide a social critique of practice; the signing on to "what works" by methodological fundamentalists; and to a reaction against the perceived excesses of postmodernism. Most importantly, he attributes it to his view of favoritism toward experimental research as found in the No Child Left Behind Act of 2001 and in the National Research Council (2002) report, *Scientific Research in Education* (SRE). In SRE, he finds a report that views educational research as distinct from humanistic scholarship, advances the "piling up more and more truths" as cumulative knowledge, and endorses research questions aimed at understanding causal mechanisms. Indeed, the three types of research questions, according to the SRE report, that should be asked -What is happening? Is there a systematic effect? And why or how is it happening? – involves collecting both quantitative and qualitative data, a form of "mixed-methods experimentalism" (p. 49). For Howe, it raises questions about the role of qualitative methods by inferring causal relationships. What is particularly missing in the SRE Report, Howe feels, are the assumptions of qualitative-interpretive methods that involve the inclusion and dialogue with stakeholders, the exposure of "hidden" features of education, and the value-laden nature of research.

We would not be too alarmed if Howe's work stood in isolation. But, his critique has been endorsed and extensively cited in a qualitative book playing on the international stage of qualitative research. In Norm Denzin and Yvonna Lincoln's *Sage Handbook of Qualitative Research* (2005), they discuss mixed methods experimentation under a section called "resistances to qualitative studies" (p.8). They, like Howe, emphasize how mixed methods research views qualitative research as filling an auxiliary role and it takes qualitative research out of its "natural home" -within the critical, interpretive framework. This natural home involves including stakeholders in the dialogue of research, makes them active participants in inquiry, and helps their silenced voices to be heard (Denzin & Lincoln, 2005).

In both Howe (2004) and Denzin and Lincoln (2005), we have a limited view of mixed methods research that underemphasizes the importance of qualitative research and casts negative light on mixed methods. They unfortunately make the assumption that qualitative research in mixed methods inquiry is always given secondary or auxiliary status. In contrast, writers that we will cite give it a primary role, calling it "qualitatively-driven mixed methods research" (Mason, 2006, p. 9). The critics further assume that qualitative research, within a mixed methods context, reinforces this secondary status, especially in experimental research. Although some experimental writers certainly include qualitative data as adjunct, other writers see it as a major arm of the intervention trial (e.g., Sandelowski, 1996), and advance a much broader role for it. Moreover, mixed methods studies involving experimental trials is only one type of design, and ample evidence suggests a priority given to qualitative in several types of mixed methods designs (Creswell, et al., 2003). Finally, the critics assume that qualitative interpretive approaches are not found or utilized in mixed methods research. To counter this thinking, we summarize the stances of several writers who have discussed the value of interpretive frameworks in mixed methods (e.g., Oakley, 2000), and we cite a growing list of empirical studies that emphasize the interpretive frameworks.

Qualitatively Driven Mixed Methods Research

Qualitative research has much to contribute to mixed methods research, and it is this message that the British sociologist, Jennifer Mason (2006), adds to the discussion. Mason, probably best known in the international qualitative research community for her book, *Qualitative Researching* (2002), feels that mixed methods explanations can be driven by qualitative research, and, indeed, qualitative research has much to add to mixed methods explanations. Using a "qualitative logic" (p. 13), she feels that social life is not defined by either quantitative or qualitative, or by simply the macro- or the micro-approaches. Mixing methods can enhance and extend the logic of qualitative explanations about the social world. Specifically, qualitative research can help develop quantitative measures, especially when there are no measures available or change is involved, because qualitative research is holistic (considers the particulars of each case) (Mason, 2006). Qualitative research also makes context explicit in explanations, rather than "attempting to control for them or edit them out" (p. 17). Our social research should also seek "dialogic explanations" – multiple relevancies and questions held together in creative tension – goals similar to the qualitative constructivist epistemology.

A Broader Role for Qualitative Data in Experimental, Intervention Studies

In the health sciences, discussions have been underway for several years about the value of incorporating qualitative research into intervention,

experimental trials. Recently this has been the case in the most prestigious medical journals, such as *The Lancet* (Malterud, 2001), the *BMJ (British Medical Journal)* (Donovan et al., 2002), and by the guidelines established by the National Institutes of Health (1999). This trend has not been limited to medical/health research alone, however, in school psychology, a Task Force on Evidence-based Interventions, was formed in 1999 and has offered recommendations for qualitative research to strengthen and evaluate the outcomes of interventions (Nastasi & Schensul, 2005).

One important voice to emerge in this discussion has been the writings by the nursing researcher, Margarete Sandelowski, at the University of North Carolina (1996; 2000; 2003). At first glance, it might be convenient to view her work as confirming the fears of Howe/Denzin/Lincoln that qualitative research plays an "auxiliary" role in experiments. The spirit of her work, however, is to elevate the role of qualitative methods in experimental trials (Sandelowski, 1996). After noting some of the limitations of clinical trials (lack of practical significance, not attuned to individual variation, inappropriate instruments and measures), she discusses three options for the use of qualitative methods in intervention trials:

> Qualitative methods may be used as components of case, small sample, and larger clinical trials of interventions, before a clinical trial is begun (in studies to 'trial' the trial) or after a clinical trial is completed. (p. 361)

In this statement, she advances the utility of qualitative research as an important first phase of the research, as a component within the trial, and as a follow-up to help explain the results of a trial. She proceeds to discuss the use of qualitative methods to explain individual variation, to verify outcomes, and to clarify discrepancies between the actual intervention and how participants experience it.

Our work on intervention studies suggests that Sandelowski's 1996 framework is a useful tool to broaden and expand the ways qualitative methods can enhance an intervention trial. We have found several examples of studies that fit the before-, during-, and after-trial structure, and have begun to closely look at the reasons for incorporating qualitative data and the challenges that arise in using these designs (called the "embedded" or "nested" design in which qualitative research plays a supporting role within a larger experiment) (Creswell & Plano Clark, in press). We have also noted that when published, these intervention studies typically are presented as two articles, one qualitative, and the second the trial itself – another indicator of the relative importance of qualitative research as a stand-alone publication. We have also developed a compendium of practices of incorporating qualitative data into intervention trials to encourage qualitative research in experiments, as shown in Table 1, and we have used Sandelowski's (1996) framework to organize these practices.

Other Qualitative Applications in Mixed Methods Research

The emphasis on qualitative research in mixed methods designs is not limited to experimental studies, contrary to what Howe/Denzin/Lincoln suggest. One type of mixed methods design is an "exploratory sequential" design in which mixed methods research begins with a qualitative arm that often shapes the direction of the entire study (Creswell & Plano Clark, in press). In this type of design, the research begins with qualitative research, such as in depth case studies, exploratory interviews or focus groups, or detailed observations of a setting, and then is followed up by a quantitative component, such as the administration of an instrument or the conduct of a survey. The qualitative component in this type of design is clearly not an adjunct. It is also helpful to note that within any given mixed methods study, the priority (Morgan, 1998) or weight (Creswell & Plano Clark, in press) can shift to the qualitative component (e.g., a large ethnography followed by a smaller survey). Signs of this priority might include: the wording of the title, the explicit identification of a guiding worldview, the primary aim in a purpose statement, the use of more space for qualitative than quantitative in the article, or a more in depth analysis of the qualitative themes than the statistical results (Creswell & Plano Clark, in press). We have explored a number of reasons that mixed methods researchers choose to emphasize qualitative data. These include participant selection; instrument development; explaining the results of quantitative surveys; helping to explain the mechanisms behind quantitatively measured relationships among variables; exploring surprising or anomalous results, or results that were unexpected based on current theories; giving voice to different perspectives; and generating a theory or model that is grounded in the viewpoints of the participants that is subsequently tested or refined using quantitative methods (Bryman 2006; Creswell et al., 2003; Morgan 1998).

Table 1
Compendium of Research Objectives for Adding Qualitative Research into Intervention Trials

Research Objectives for Collecting Qualitative Data
Before an Intervention Trial
Develop an instrument for use in intervention trial (when a suitable instrument is not available)
Develop good recruiting/consent practices for participants into a intervention trial
Understand the participants, context, and environment so that an intervention would work (i.e., applying interventions to real-life situations)
Document a need for the intervention
Develop a comprehensive assessment of baseline status for comparison post-trial
During an Intervention Trial
Validate the quantitative outcomes with qualitative voices of the participants
Understand the impact of the intervention on participants (e.g., barriers/facilitators)
Understand unanticipated participant experiences during the trial
Identify key constructs that might potentially impact the outcomes of the trial, including changes in the sociocultural environment
Identify resources that can aid in conducting the intervention
Understand and depict process experienced by the experimental groups
Check on the manipulation and implementation of procedures
Identify mediating and moderating factors
After an Intervention Trial
Understand how participants in the trial view the results
Revise the treatment based on participant feedback
Explain in more depth the quantitative outcomes (than the statistical results will allow) of a trial (e.g., underrepresented variations in the trial outcomes)
Determine the sustained effects of an intervention after a trial
Understand how the mechanisms worked in a theoretical model used in a clinical trial
Determine if the processes in conducting the trial had treatment fidelity
Assess the community/context for comparisons with baseline assessment to determine if there were unanticipated outcomes (good or bad)

Table 2 summarizes five studies in which the qualitative methods and procedures play a prominent role. The Table outlines the problem, the type of mixed methods design, qualitative and quantitative research methods including the type of data collected, and the reason for mixing methods. In the study by Brett, Heimendinger, Boender, Morin, and Marshall (2002) qualitative ethnography approaches were used to explore contextual influences to help shape and inform the design of an experiment. The topic of study was individual perceptions of factors that affect decisions about physical activity and diet. The preliminary ethnography played a prominent role because it was the initial intent of the research team to collect qualitative data to describe the family and social context of the decisions regarding the individuals' decision about physical activity and food choice. The data collected through interviews and in-home visits not only helped the researchers to understand the family and social context, but also provided a means to focus the research on the interests and values of the families in the study.

A second study used qualitative grounded theory to follow up on initial quantitative results. Wampold et al. (1995) used a grounded theory design to develop a model of a social science process that described the nature of social interactions of chemists in an academic setting. In this two component mixed methods study, the grounded theory study was the second component which provided a means for the researchers to explain the process that task-oriented people use in participation in social situations-an issue that arose during the initial quantitative study. While the qualitative data in this study has equal priority with the quantitative study, it is included in our exemplars because the qualitative data provided a context (see Mason, 2002) of social participation, and offered both confirming and contradictory evidence about task-oriented people that was not available in the quantitative data.

Qualitative research has also been used to determine whether qualitative data will confirm the quantitative findings. This was the case in Mactavish and Schleien's (2004) study of recreation and leisure in families that have children with disabilities. The priority given to qualitative data is evident in three ways. First, prior to the study the authors conducted a small qualitative study with several families to explore their perceptions on leisure. Second, in the methods section the authors state that the study was "grounded in a naturalistic paradigm" (p.125). Finally, while both quantitative survey data and qalitative interview data were collected, qualitative validation techniques including member checking and peer reviews were used to enhance the credibility of the overall interpretation of the data.

Qualitative data have been given primary emphasis in a study to develop a survey instrument for a large sample. Kutner, Steiner, Corbett, Jahnigen, and Barton's (1999) study of terminally ill patients receiving palliative care illustrates this approach. The study's qualitative interviews with 22 terminally ill patients provided researchers with an understanding of the information needs of terminally ill patients who were receiving palliative care. The themes and statements from the interview data had priority over the quantitative survey data in the study because it provided the researchers with critical data needed to design an instrument based on the viewpoints of the terminally ill patients.

Finally, qualitative data can be used to expand and elaborate on quantitative findings. Stoldosky and Grossman's (2000) study of how competent mathematics and English teachers adapt to changing cultural diversity illustrates how qualitative research can be used to extend quantitative surveys with in-depth case studies. The priority of the qualitative data was evident in a number of ways. This study used a rigorous case study design that included interviews and observations. The thematic analysis and cross-case analysis occupied approximately 20 pages of the study compared to approximately five pages that were devoted to the analysis of the survey data. In addition, in the analysis of the survey data, references were made to the individuals in the case study.

In summary, these studies not only illustrate ways that mixed methods researchers give emphasis to qualitative data, they also illustrate the use of rigorous qualitative research within mixed methods designs. For example, Wampold et al. (1995) included an axial coding diagram, Stoldosky and Grossman (2000) included cross-case analysis, and Brett et al. (2002) used both interview and observation data in their ethnography.

Use of Interpretive Frameworks in Mixed Methods Research

Aside from the emphasis given to qualitative research in mixed methods studies, an interpretive qualitative approach is evident in writings about mixed methods and in empirical mixed methods studies. Recall that Howe, Denzin, and Lincoln were critical of mixed methods research for not incorporating qualitative research found in interpretive, critical approaches. Interpretive research involves using issues, language, and approaches to research that empower the participants, recognize their silenced voices, honor their individual differences, and position both the researcher's and the participant's views in a historical/personal/ political context (Deem, 2002). Distinct interpretive

Table 2
Mixed Methods Studies that Provide Emphasis on Qualitative Research

Authors	Topic	Mixed Method Design*	Quantitative Research Design and Methods	Qualitative Research Design and Methods	Reason for Mixing Methods
Brett et al. (2002)	Diet and physical activity intervention	Exploratory	Intervention Trial Diet and physical activity intervention	Ethnography 2 waves of interviews In-home observations	Improve an intervention design
Wampold et al. (1995)	Social skills within social settings	Explanatory	Survey 2 social skills inventories	Grounded Theory Open and axial coding interviews observations	Develop a model to explain a process
Mactavish and Schleien (2004)	Recreation and leisure in families that have children with disabilities	Explanatory	Survey Family recreation questionnaire	Thematic Analysis Interviews	Validate quantitative results
Kutner et al. (1999)	Information needs of terminally ill patients	Exploratory	Survey Information needs questionnaire developed from qualitative data	Thematic Analysis Interviews	Develop an instrument
Stoldosky and Grossman (2000)	Teachers adaptation to changes in school diversity	Triangulation	Survey Survey on teacher adaptation	Case Study Interviews Observations	Provide a means to examine trends in a national study

**Note*. A Triangulation Design is a one-phase mixed methods study in which the researcher seeks to implement quantitative and qualitative methods during the same time frame and with equal weight. An Explanatory Design is a two-phase mixed methods study in which the researcher first collects and analyses quantitative data and then builds on the results of these data in a second phase of qualitative data collection and analysis. An Exploratory Design is also a two-phase design in which the researcher first collects and analyzes qualitative data and builds on the results of these data in a second phase of quantitative data collection and analysis (Creswell & Plano Clark, in press).

communities also exist, such as racial, ethnic, gendered, disability, and gay and lesbian communities (Denzin & Lincoln, 2005; Mertens, 2003).

We have found that a number of writers from these interpretive communities have embraced mixed methods research. For example, feminist researchers, such as Brannen (1992), Maynard and Purvis (1994), Devine and Heath (1999), and Skeggs (2001) have highlighted the importance of both qualitative and quantitative methods (Deems, 2002). A prominent feminist qualitative researcher, Oakley, also calls for

the combination of qualitative and quantitative research. Ann Oakley is a Professor of Sociology and Social Policy at the University of London Institute of Education with long-term interests in the study of the history of methodology and in gender, the family, and health. We will draw on two of her works here – an article published in *Sociology* in 1998 and her book, *Experiments in Knowing: Gender and Method in the Social Sciences* (2000). Oakley starts with the premise that methodology is itself gendered and that the quantitative/qualitative dichotomy is an ideological representation. She goes on to say that early feminist methodology texts all celebrated qualitative methods as best suited to hearing women's accounts of their experiences. These methods included participant observation, unstructured/semi-structured interviewing, life history methods and focus groups. The feminist critique contested quantitative research on several grounds, such as the subject/object dichotomy, that the knower/researcher can be neutral and value-free, and that objectivity is actually "male subjectivity." Quantitative imitation of the natural sciences with the knower as the "expert," creates an unequal power relationship, a hierarchical situation contrary to feminism's emancipatory ideals. The use of numbers in quantitative research creates artificially controlled realities, thus advancing men's desire to dominate and to exert power over people. On the other hand, qualitative methods acknowledge multiple viewpoints, the role of values, and the subjectivities of both the researcher and those researched. Thus, qualitative research has the advantage of "thinking from caring," investigating actual practices and relations, and the "iterative attention to the details of what women say, and the forms of analysis dedicated to reproducing all of this as 'faithfully' as possible" (Oakley, 1998, p. 713).

But there are challenges with qualitative research, Oakley goes on to say, such as truth-claims of using women-only samples, of interviewing that creates a hierarchical arrangement, of compromising truth-seeking when royalties are shared with participants or participants involved in data analysis, of reactivity when researchers influence their data, and of mixed interpretations when data conflict. For feminist research and advancing an emancipatory project, Oakley sees qualitative and quantitative research on a continuum rather than as a dichotomy, a continuum reinforced by a close study of the history of the social sciences which does not convey a straightforward picture of two communities of scientists. Quantitative research has served the goals of feminism, such as the large-scale social surveys, and the studies of women vis-à-vis men in the labor market, the home, and in domestic relations. Quantitative methods and statistics have established the gendering of structural inequalities in most societies. In sum, Oakley's position is that the construction of quantitative and qualitative methods as oppositions impedes critical thinking about creating an appropriate knowledge for women. The traditional stance of feminism toward embracing qualitative as the only approach does not further feminist social research.

Oakley's comments remind us of the discussion by Reichardt and Cook in 1979 who advanced ten different ways that quantitative and qualitative research are similar, not different. However, she takes their argument one step further by suggesting the advantages of quantitative research to feminists who are primarily oriented toward using qualitative research. Unfortunately, Oakley does not provide the specifics as to how mixed methods can inform emancipatory research, and her argument lies largely in offering a critique of both quantitative and qualitative research. In all fairness, Oakley's views may be related to her work in evidence-based practices in health and education, as well as her work in the history of science (Deem, 2002).

Others, however, have more directly related emancipatory aims and theoretical frameworks in qualitative research to mixed methods inquiry. In terms of interpretive approaches in mixed methods research, Greene and Caracelli (1997) advocated for making advocacy worldviews explicit in mixed methods studies, Creswell et al. (2003) suggested that one type of mixed methods design included a "transformational" model, employing a theoretical framework (e.g., feminism), and Mertens (2003), a disability researcher, linked many phases of research (e.g., stating the research question) to the study of underrepresented populations. We have also found a number of studies that incorporated critical qualitative interpretive approaches into their inquiries that report both qualitative and quantitative data, such as Skeggs' (1999) study of gay and lesbian sexuality and violence in urban public spaces, Ely's (1995) study of women's gender construction of identity; Wajcman's (1998) study of female and male senior managers in five high technology multi-national companies; Bhopal's (2000) study of gender, race, and power of South Asian women in London; and Watkins' (1998) study of mentoring of African Americans. These are all good examples of the use of interpretive, theoretical frameworks in a mixed methods study.

Turning it Around - How Can Mixed Methods Enhance Qualitative Research?

The example studies presented in Table 2 and discussions of emancipatory frameworks for mixed

methods research present clear arguments of how the ideals and foundations of qualitative research can play prominent roles within mixed methods research. To carry this argument further, we suggest that there are also ways in which mixed methods research might also enhance the goals of qualitative research. We believe there are circumstances where quantitative data can play a supportive role to qualitative frameworks. For example, quantitative data might be the best approach to guide purposeful sampling strategies, such as guiding maximal variation sampling or theoretical sampling based on individuals' attributes, attitudes, or behaviors. Quantitative data can also be useful to more fully describe the social and historical contexts of a case, such as providing statistics regarding the AIDS epidemic within a case study of AIDS-affected families, or providing a richer description of a case, such as including depression and anxiety scores in addition to qualitative descriptions. There are times when quantitative data may further advocacy-related goals, by including the perspectives of a greater variety of individuals or being able to highlight emanicipatory concerns to larger audiences, including those who value numbers. Quantitative data can also be a useful supplement to qualitative research for the purposes of theory generation, which the quantitative data might help refine a model based on larger numbers than could be feasibly interviewed. Unfortunately, we have found few published mixed methods studies that incorporate supplemental quantitative data to enhance qualitative research, but we fully expect these numbers to grow as more qualitative researchers consider how mixed methods research can better address some of their research goals.

Implications and Conclusions

What are the implications of our reaction to the Howe, Denzin, and Lincoln commentary on mixed methods research? We see important implications for mixed methods writers, those conducting mixed methods research, readers of mixed methods studies, and educational researchers. For those writing about mixed methods studies, we need to continue to educate writers about the literature of mixed methods (the designs, the potential experimental uses, and the employment of interpretive, theoretical frameworks). We also need to encourage researchers to include interpretive frameworks in their mixed methods studies. Mertens' (2003) chapter is a start toward developing a better understanding of incorporating emancipatory aims into all aspects of a mixed methods study.

For those conducting mixed methods research, consider the important role of qualitative research in mixed methods research. It might weigh heavily into the study as a major priority. It might begin a study, provide the context necessary in a study, explore variables and constructs that are unknown, and develop themes necessary to study underrepresented populations. It should be conducted with rigor and using the methods and procedures of qualitative research. For those reading mixed methods research, recognize that some qualitative researchers will be threatened by mixed methods research, see it primarily as a quantitative orientation toward research, and seek to keep qualitative research "pure" without being diluted by quantitative research. But, with increasing frequency, qualitative researchers are involved in the development of mixed methods research, and it has a major role in this form of research. As strong, knowledgeable qualitative researchers engage in mixed methods research, qualitative inquiry will continue to hold prominent positions in mixed methods approaches. Also, recognize that it is possible to use an interpretive, critical, theoretical framework within a mixed methods study. The examples cited in this discussion attest to it. For educational research, qualitative research can enhance mixed methods (and vice versa). We would advise, however, that the possibilities for qualitative data within experiments needs to be expanded (see Table 1) and that the three questions advanced by SRE study actually embrace a mixed methods approach to research rather than the total exclusion and minimization of qualitative research. Also, in educational research, the full array of types of mixed methods studies can be found in which qualitative data are combined with surveys, correlational, or single case designs, as well as experiments.

In this discussion, we have presented evidence to suggest that qualitative research can assume a major role in mixed methods studies and it has specific features that make it attractive to mixed methods studies. Evidence shows that qualitative research is not always in a supportive, auxiliary role to quantitative research as suggested by Howe, Denzin, and Lincoln would suggest. This is not the case in either traditional constructivist forms of qualitative research and in the more recent, interpretive, critical approaches. We have drawn on several qualitative authors who have advanced mixed methods research and see qualitative research as not only contributing to the inquiry, but also providing understanding for the research, by helping to develop intervention trials, and helping to advance an emancipatory agenda. Writers such as Oakley, Mason, and Sandelowski all

contribute their thoughts to suggest the importance of qualitative research to mixed methods and vice versa. To their voices, we add our own, through our work on a compendium of practices for incorporating qualitative data into intervention trials, and through our discussion of mixed methods designs that include those that place a priority on qualitative research as well as emphasize critical, emancipatory frameworks. Mixed methods studies that employ interpretive, critical frameworks are available and being published in the literature. Qualitative research plays an important role in explaining the social world, and it can enhance, even "drive" mixed methods research, extend experimental applications, and further emancipatory aims. This evidence should cause critics to pause and further reflect on the important role for qualitative research in mixed methods inquiry.

What explains their position may be related to a lack of training and skills in quantitative research, a perceived threat by the federal government and its reports, an attempt to keep qualitative research "pure" (Rossman & Wilson, 1985), or simply a lack of understanding of the literature and research in mixed methods. Although Howe/Denzin/Lincoln refer to methods of using qualitative data in experimental trials, their concerns may be more related to paradigms and the mixing of paradigms than the actual methods. Granted, the field of mixed methods is dispersed across the social and human sciences, and writers in the field have not done an adequate job in conveying the breadth of mixed methods studies. Added to this is that some quantitative researchers have been supportive of mixed methods research. Also, some mixed methods researchers might convey a more quantitatively-oriented than qualitatively-oriented approach to mixed methods research, such as the inclusion of explanatory data analysis (Tashakkori & Teddlie, 1998), the emphasis on standards for inferences and validity (Erzberger & Kelle, 2003), and the trend toward the slowly emerging emancipatory mixed methods studies (Creswell & Plano Clark, in press). Despite these caveats, the "ominous development" of qualitative methods as playing an auxiliary role in mixed methods experiments that Howe (2004) refers to may be that some qualitative researchers have not recognized how mixed methods can enhance the development of qualitative research. This process begins by recognizing the primary role of qualitative research in many mixed methods studies, by viewing the expanded list of design possibilities that give support to this primary role, and to the emerging use of interpretive frameworks.

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