

Improving the Quality of Mixed Research Reports in the Field of Human Resource Development and Beyond: A Call for Rigor as an Ethical Practice

Anthony J. Onwuegbuzie, Julie A. Corrigan

Since 2000, only 13% of the total number of empirical research articles (n = 230) published in Human Resource Development Quarterly (HRDQ) have represented mixed research studies. Plausible explanations for why the HRDQ prevalence rate is not more than 13% include the possibility that a high proportion of mixed research studies that are being submitted to HRDQ are not of sufficient quality to be accepted. Thus, in this editorial, we provide evidence-based guidelines for conducting and reporting mixed research that are framed around Collins, Onwuegbuzie, and Sutton's (2006) 13-step model of the mixed research process. Further, we divide our reporting standards into four general areas—research formulation, research planning, research implementation, and research dissemination—that we itemize via a taxonomy that contains more than 60 elements.

Key Words: mixed methods research, mixed research, 13-step mixed research process, prevalence rate studies, reporting standards, evidence-based guidelines, guidelines for conducting and reporting mixed research, research rigor

According to its website, *Human Resource Development Quarterly (HRDQ)*, the first scholarly journal focused directly on the evolving field of human resource development (HRD), “recognizes the interdisciplinary nature of the HRD field and brings together relevant research from the related fields, such as economics, education, management, sociology, and psychology” (para 1). Because of

its interdisciplinary and evolving nature—potentially combining fields that have almost an exclusive tradition of conducting quantitative research (e.g., psychology) with fields that have more of a tradition of conducting qualitative research (e.g., education)—the field of HRD lends itself to the use of *mixed methods research*. Broadly speaking, mixed methods research represents the “class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study” (Johnson & Onwuegbuzie, 2004, p. 17). Because this research tradition involves more than mixing *methods*, a more appropriate term for this tradition is *mixed research* (Johnson, Onwuegbuzie, & Turner, 2007). Hence, for the remainder of this editorial, we will use the term *mixed research*.

Since the publication of the first edition of the *Handbook of Mixed Methods in Social and Behavioral Research* in 2003 (Tashakkori & Teddlie, 2003), the presence of mixed research studies in the published literature has increased (Ivankova & Kawamura, 2010). Therefore, since this seminal publication, several researchers (e.g., Alise & Teddlie, 2010; Powell, Mihalas, Onwuegbuzie, Suldo, & Daley, 2008) have provided insights into the use of mixed research across numerous fields via what Alise and Teddlie (2010) refer to as *prevalence rate* studies (i.e., “a line of inquiry into research methods in the social/behavioral sciences [referring to the proportion of articles using a particular methodological approach]”, p. 104). Building on the work of Hibbard and Onwuegbuzie (2012), we have identified 25 prevalence rate studies wherein the prevalence of mixed research studies across various fields or disciplines have been documented. All of these prevalence rate studies have taken place since 2004. Interestingly, the fields of education (Alise & Teddlie, 2010; Niglas, 2004) in general and mathematics education (Hart, Smith, Swars, & Smith, 2009; Ross & Onwuegbuzie, 2010, 2012, 2014) in particular consistently have had the highest prevalence rates.

To date, the prevalence of mixed research studies representing the HRD field is unknown. As such, we conducted a content analysis of studies published in *HRDQ* from 2000 to the first edition of 2014—representing 13.25 years. The year 2000 was selected as the starting point because it marked the beginning of what Denzin and Lincoln (2011) referred to as the *methodologically contested present*, which represented a period of conflict and tension and the emergence of a growing body of literature on paradigms and methods. Specifically, we followed Neuendorf’s (2001) steps to conducting a content analysis: (a) a theory and rationale, (b) conceptualization, (c) operationalizations, (d) coding schemes, (e) sampling, (f) training and pilot reliability, (g) coding, (h) final reliability, and (i) tabulation and reporting. Neuendorf’s (2001) method allowed for a systematic and quantitative research approach to identifying the ways in which mixed research studies have been implemented in the field of HRD.

Table 1. Methodological Prevalence Rates of Articles in HRDQ Since 2000

Year	All Empirical HRDQ Articles			MR Empirical HRDQ Articles			
	Quan	Qual	MR	QUAN/ qual	QUAL/ quan	QUAN/ QUAL	Explicit Mention of MR
2014*	3	0	0	0	0	0	0
2013	9	6	1	0	0	1	1
2012	10	2	2	2	0	0	1
2011	14	2	0	0	0	0	0
2010	15	1	1	1	0	0	0
2009	14	0	3	1	1	1	0
2008	11	0	2	2	0	0	0
2007	12	5	2	2	0	0	0
2006	6	3	4	3	1	0	0
2005	14	2	2	2	0	0	0
2004	12	2	3	3	0	0	0
2003	19	1	1	0	0	1	0
2002	11	3	3	2	0	1	0
2001	11	4	1	0	0	1	0
2000	7	2	4	2	2	0	0
Sum	168	33	29	20	4	5	2
Total Articles	230						
Percent	73%	14%	13%	69%	14%	17%	7%

*At the time of publication, only one edition of the journal had been published in 2014.

Quan = quantitative research; Qual = qualitative research; MR = mixed research.

Uppercase = dominant; Lowercase = less dominant.

For our prevalence rate study, we analyzed only empirical articles. Thus, monographs, book reviews, essays, editorials, conceptual articles, theoretical articles, and methodological articles were excluded from our analysis. This led to the examination of 230 empirical research articles (see Table 1). The number of empirical articles across the 13.25 years ranged from 13 to 21 ($M = 16.21$, $SD = 2.36$), with the greatest number of empirical articles ($n = 21$) being published in 2003.

To determine whether to classify an empirical article as representing a mixed research study, we used Powell et al.'s (2008) eight categorization rules (see Appendix). Further, to ensure and to maintain integrity of the coding procedure (i.e., high intercoder agreement), both authors manually coded empirical articles published between 2004 and 2014, yielding 100% agreement; subsequently, the remaining articles were read and coded by one author only.

For the empirical studies that were coded as representing mixed research, they were coded further according to the three aforementioned dimensions: quantitative-dominant mixed research, qualitative-dominant mixed research, and equal-status mixed research. As noted by Johnson et al. (2007), in quantitative-dominant mixed research, the researcher adopts a quantitative, post-positivist view of the research process, while, at the same time, assuming that the addition of qualitative data and approaches would better address the underlying research question(s). In contrast, in qualitative-dominant mixed research, the researcher adopts a qualitative, constructivist-poststructuralist-critical view of the research process while at the same time recognizing that the inclusion of quantitative data and approaches would better address the underlying research question(s). Finally, in equal-status mixed research, the researcher adopts (approximately) equal use of quantitative and qualitative methodologies.

It can be seen from Table 1 that of the total number of empirical research articles published in *HRDQ* since 2000 ($n = 230$), the articles are predominantly quantitative (73%), followed by qualitative (14%) and, finally, mixed (13%) research. Of the mixed research articles that were identified, the majority (69%) used quantitative-dominant approaches, and in only 7% of these mixed research studies did the researcher(s) declare explicitly that the study represented mixed research. This proportion of mixed research articles is higher than the 2.85% identified by Wisdom, Cavaleri, Onwuegbuzie, and Green (2012) for authors of identified mixed research articles ($n = 47$) of all empirical articles ($n = 1,651$) published between 2003 and 2007 from four top-ranked health services journals, who designated their studies as representing mixed research.

The mixed research prevalence rate of 13% for *HRDQ* is lower than the range for prevalence rates of 29% to 34% that has been documented for the field of mathematics education (Hart et al., 2009; Ross & Onwuegbuzie, 2010, 2012, 2014). However, it should be noted that the field of mathematics education has among the highest prevalence rates. Further, the 13% *HDRQ* prevalence rate was lower than the 19% (Niglas, 2004), 21% (Ivankova & Kawamura, 2010), and 24% (Alise & Teddlie, 2010) reported for the field of education as a whole. In contrast, the *HRDQ* prevalence rate is similar to the prevalence rate found for the fields of school psychology (13.7%; Powell et al., 2008), special education (11.5%; Collins, Onwuegbuzie, & Sutton, 2007), organizational research (12.9%; Molina-Azorín & Cameron, 2010), business (14%; Hurmerinta-Peltomaki & Nummela, 2006), and business and management (14%; Cameron & Molina-Azorín, 2011). At the same time, the *HRDQ* prevalence rate is higher than other fields such as the 2% (Leech & Onwuegbuzie, 2011) to 3.84% (Ray et al., 2011) documented for the counseling field.

Plausible explanations for why the *HRDQ* prevalence rate is not more than 13% include the possibilities that the majority of mixed research

conducted in the area of HRD is being submitted either to other HRD journals or to non-HRD journals (e.g., journals that more routinely publish mixed research studies) and/or a high proportion of mixed research studies that are being submitted to *HDRQ* are being rejected. Although the first reason is beyond the scope of this editorial to address, the second reason, if this is the case, can be addressed by authors of mixed research studies having access to evidence-based guidelines for conducting and reporting mixed research. It should be noted that although these guidelines have been designed for mixed researchers, because mixed research studies typically have one or more quantitative components/phases and one or more qualitative components/phases, these guidelines also are applicable to both quantitative and qualitative researchers.

The seminal document developed by the Task Force on Reporting of Research Methods in American Educational Research Association (AERA) Publications and adopted by the AERA Council in 2006 provides a useful starting point for these guidelines. According to AERA (2006), reports of empirical research studies should be both *warranted* and *transparent*. *Warranted* implies that sufficient evidence is documented to justify the findings and inferences that ensue. *Transparent* implies that sufficient information regarding the research process should be included. According to AERA (2006), “reporting that takes these principles into account permits scholars to understand one another’s work, prepares that work for public scrutiny, and enables others to use that work” (p. 33). We believe that a concept that encapsulates both warranted and transparent is *rigor*. By rigor, we mean conducting and reporting a mixed research study that is (a) *comprehensive* (i.e., fully involves all the steps of the research process), (b) *systematic* (i.e., follows a sequence of steps or phases such as those we present later in this editorial), (c) *evaluative* (i.e., whereby every step of the process is evaluated for relevancy and credibility), (d) *defensible* (i.e., integrates a rationale for decisions regarding the logic of inquiry, strategies, and designs), and (e) *transparent* (i.e., involves documenting explicitly the logic of inquiry and activities that underlie the research process). Whereas the first three aforementioned elements represent rigor in *conducting* mixed research (and quantitative and qualitative research, for that matter), the last two elements represent rigor in *reporting* mixed research (and quantitative and qualitative research, for that matter). With respect to both conducting and reporting of studies, mixed researchers should leave what qualitative researchers refer to as an *audit trail*—a strategy promoted by Halpern (1983).

For some researchers, the word *rigor* connotes what Janesick (2000) called “methodolatry,” which refers to having “a preoccupation with selecting and defending methods to the exclusion of the actual story being told” (p. 390). Yet we contend that conducting a rigorous study and documenting this rigor in the ensuing research report add more richness to the report, as well as convinces reviewers, editors, and readers that the researcher is competent and

that the report represents quality. However, to avoid the treatment of rigor as a method from shutting down the conversation among researchers within and across research traditions, we view the attention to rigor as reflecting much more of an *ethical* issue. That is, because quantitative, qualitative, and mixed researchers essentially are united by a goal to achieve meaning making, a question that researchers should ask in every empirical research study is, "To what extent have I/we minimized threats to verification/trustworthiness/legitimation/authenticity/credibility/transferability/dependability/confirmability?" For example, in the qualitative study or qualitative phase of a mixed research study, what steps has/have the researcher(s) taken (e.g., member checking, peer debriefing) to determine that he/she/they have captured the voice of every participant (e.g., via interviews)? And a qualitative researcher should not use serving as the instrument of the study as an excuse for not viewing rigor as an ethical issue. Similarly, in the quantitative study or quantitative phase of a mixed research study, what steps has/have the researcher(s) taken (e.g., score reliability) to determine that he/she/they have captured the voice of every participant (e.g., via the administration of a quantitative instrument)?

Toward a Framework for Rigor in Mixed Research

Our framework for rigor is based on Collins, Onwuegbuzie, and Sutton's (2006, p. 71) model of the research process. These authors conceptualized mixed research as involving the following 13 distinct steps:

1. Determining the mixed goal of the study.
2. Formulating the mixed research objective(s).
3. Determining the rationale of the study and the rationale(s) for mixing quantitative and qualitative approaches.
4. Determining the purpose of the study and the purpose(s) for mixing quantitative and qualitative approaches.
5. Determining the mixed research question(s).
6. Selecting the mixed sampling design.
7. Selecting the mixed research design.
8. Collecting quantitative and/or qualitative data.
9. Analyzing the quantitative and/or qualitative data using quantitative and/or qualitative analysis techniques.
10. Validating/legitimizing the mixed research findings.
11. Interpreting the mixed research findings.
12. Writing the mixed research report.
13. Reformulating the mixed research question(s).

These 13 steps can be subdivided into the following four major stages: research formulation stage (i.e., goal of the study, research objective, rationale for mixing, purpose of mixing, research question[s]), research planning stage

(i.e., sampling design, research design), research implementation stage (i.e., data collection, data analysis, data validation/legitimation, data interpretation), and research dissemination stage (i.e., report writing, reformulation of the research question[s]). Thus, building on the works of Leech and Onwuegbuzie (2010a, 2010b) and Wisdom et al. (2012), our reporting standards are divided into four general areas—research formulation, research planning, research implementation, and research dissemination. The guidelines pertaining to these 13 steps are evidence-based because, over the years, numerous researchers who have used this 13-step model have experienced distinctions such as an article being published in one of AERA's flagship journals that, for 5 consecutive years (2007–2011), was the most read article published in *American Educational Research Journal* (i.e., Onwuegbuzie et al., 2007); articles that have received outstanding paper awards (e.g., Onwuegbuzie, Frels, Leech, & Collins, 2011a; see also, Onwuegbuzie, Frels, Leech, & Collins, 2011b), and several dissertations that have won awards or that have been very highly placed in national/international competitions (e.g., Bengé, 2012). These evidence-based guidelines have been itemized via a taxonomy in Figure 1. In the following sections, we will discuss these guidelines, as well as how they pertain to rigor and the conduct of ethical research. However, because of the space constraints, we can provide only an overview of these guidelines.

Research Formulation Stage

The research formulation stage involves the first five steps of the mixed research process, namely, identification of the goal, objective, rationale, purpose, and question(s). In formulating or conceptualizing a mixed research study, the researcher should maintain a *mixed methodological way of thinking* (Onwuegbuzie, 2012). As described by Greene (2007), a mixed methodological way of thinking is

... generative and open, seeking richer, deeper, better understanding of important facets of our infinitely complex social world. ... [This] way of thinking generates questions, alongside possible answers. It generates results that are both smooth and jagged, full of relative certainties alongside possibilities, and even surprises, offering some stories not yet told. (p. 20)

A crucial aspect of adopting a mixed methodological way of thinking means that the mixed researcher has philosophical awareness such that he/she is mindful of his/her epistemology, ontology, and axiology, and his/her belief systems with regard to the nature of knowledge, knowledge accumulation, goodness or quality criteria, values, ethics, inquirer posture, and training—as well as the role that these components play in the mixed research study (Onwuegbuzie, Johnson, & Collins, 2009). Collins, Onwuegbuzie, and Johnson (2012) refer to this level of philosophical awareness as “philosophical clarity,” which they define as “the degree that the researcher is aware of and

Figure 1. Guidelines for Conducting and Reporting Mixed Research for HRD Researchers and Beyond

Steps and Guidelines	
Formulate	
1. Determine the Goal of the Study	
1.1.	Identify philosophical assumptions and stances (e.g., pragmatism-of-the-middle, pragmatism-of-the-right, pragmatism-of-the-left, anticonflationist, critical realist orientation, dialectical stance, complementary strengths, transformative-emancipatory, a-paradigmatic stance, substantive theory, communities of practice stance, dialectical pluralism, critical dialectical pluralism; Onwuegbuzie, Johnson, & Collins, 2009).
1.2.	Identify the conceptual stance (a-paradigmatic stance, substantive theory stance, complementary strengths stance, multiple paradigms stance, dialectic stance, alternative paradigm stance; Teddlie & Tashakkori, 2010).
1.3.	Determine generalization goal (i.e., external [statistical] generalization, internal [statistical] generalization, analytic generalization; case-to-case transfer, naturalistic generalization; Onwuegbuzie, Slate, Leech, & Collins, 2009).
1.4.	Treat each relevant article as data that generate both qualitative (e.g., qualitative findings, literature review of source article, source article author's conclusion) and quantitative (e.g., <i>p</i> values, effect sizes, sample size score reliability, quantitative results) information that yield a mixed research synthesis (Onwuegbuzie & Frels, in press).
1.5.	Subject each document selected as part of the literature review to summarization, analysis, evaluation, and synthesis (Onwuegbuzie & Frels, in press).
1.6.	Provide literature reviews that are comprehensive, current, and rigorous; that have been compared and contrasted adequately; and that contain primary sources that are relevant to the research problem under investigation, with clear connections being made between the sources presented and the present study (Onwuegbuzie & Frels, in press).
1.7.	Present clearly the theoretical/conceptual/practical framework (Lester, 2005).
1.8.	Assess the findings stemming from each individual study and the emergent synthesis for trustworthiness, credibility, dependability, legitimation, validity, plausibility, applicability, consistency, neutrality, reliability, objectivity, confirmability, and/or transferability (cf. Dellinger & Leech, 2007; Leech, Dellinger, Brannagan, & Tanaka, 2010).
1.9.	Present the goal of the study (i.e., predict; add to the knowledge base; have a personal, social, institutional, and/or organizational impact; measure change; understand complex phenomena; test new ideas; generate new ideas; inform constituencies; and examine the past; Newman, Ridenour, Newman, & DeMarco, 2003).
2. Formulate Research Objectives	
2.1.	Specify the objective(s) of the study (i.e., exploration, description, explanation, prediction, and influence) for the different (i.e., quantitative, qualitative, mixed) phases of the study (Johnson & Christensen, 2013).
2.2.	Specify the rationale for each objective.
2.3.	Present clearly how these objectives relate to each other.
3. Determine the Research/Mixing Rationale	
3.1.	Specify the rationale of the study (Onwuegbuzie & Daniel, 2005).
3.2.	Specify the rationale for combining qualitative and quantitative research approaches (i.e., participant enrichment, instrument fidelity, treatment integrity, and significance enhancement; Collins, Onwuegbuzie, & Sutton, 2006).

<p>4. Determine Research/Mixing Purpose(s)</p> <p>4.1. Specify the purpose of the study (Onwuegbuzie & Daniel, 2005).</p> <p>4.2. Specify the purpose for combining qualitative and quantitative research approaches (e.g., identify representative sample members, conduct member check, validate individual scores on outcome measures, develop items for an instrument, identify barriers and/or facilitators within intervention condition, evaluate the fidelity of implementing the intervention and how it worked, enhance findings that are not significant, compare results from the quantitative data with the qualitative findings; Collins, Onwuegbuzie, & Sutton, 2006).</p>
<p>5. Determine Research Question(s)</p> <p>5.1. Avoid asking research questions that lend themselves to yes/no responses (Onwuegbuzie & Leech, 2006).</p> <p>5.2. Research questions should make clear the sample/population and the major variables/phenomena of interest (Onwuegbuzie & Daniel, 2005).</p> <p>5.3. Present mixed research questions (i.e., questions that embed both a quantitative research question and a qualitative research question within the same question) when possible (Onwuegbuzie & Leech, 2006).</p> <p>5.4. Research questions should be consistent with title, purpose of study, and design/procedures (Onwuegbuzie & Daniel, 2005).</p> <p>5.5. Specify the type of research question(s) (i.e., separate questions only, general overarching mixed methods question, hybrid mixed methods issue question, mixed methods procedural/mixing questions, combination questions, independent questions, dependent questions, predetermined questions, emergent questions; Plano Clark & Badice, 2010).</p>
<p>Plan</p>
<p>6. Select Sampling Design</p> <p>6.1. Determine the level of the research study (micro-research studies, meso-research studies, exo-research studies, macro-research studies) (Onwuegbuzie & Collins, 2014).</p> <p>6.2. Identify inclusion/exclusion criteria (Wisdom et al., 2012).</p> <p>6.3. Conduct a priori quantitative power analysis (Onwuegbuzie & Daniel, 2005).</p> <p>6.4. Conduct a priori qualitative power analysis (Onwuegbuzie & Leech, 2007a).</p> <p>6.5. Specify the initial and final sample sizes for all quantitative and qualitative phases of the study (Onwuegbuzie & Collins, 2007).</p> <p>6.6. Specify the type of sampling scheme (i.e., 5 random [i.e., simple, stratified, cluster, systematic, multistage] vs. 19 purposive [e.g., convenience, maximum variation, homogeneous, critical case, theory-based, confirming/disconfirming, snowball/chain, extreme case, typical case, intensity, politically important case, random purposeful, stratified purposeful, criterion, opportunistic, mixed purposeful, quota, multistage purposeful random, multistage purposeful]) (Onwuegbuzie & Collins, 2007).</p> <p>6.7. Present all sample size considerations made for the quantitative phase(s) (i.e., a priori power) and qualitative phases (e.g., information-rich cases) (Onwuegbuzie & Collins, 2007).</p> <p>6.8. Present the sampling scheme for both the quantitative and qualitative phases of the study (Onwuegbuzie & Collins, 2007).</p> <p>6.9. Describe the mixed sampling scheme (i.e., concurrent-identical, concurrent-parallel, concurrent-nested, concurrent-multilevel, sequential-identical, sequential-parallel, sequential-nested, and sequential-multilevel; Onwuegbuzie & Collins, 2007).</p> <p>6.10. Link the type of generalization to be made (i.e., statistical generalization, analytic generalization, and case-to-case transfer) to the selected sampling design, sampling scheme, and sample size(s).</p>

7. Select Mixed Methods Research Design

- 7.1. Outline the mixed research design (Nastasi, Hitchcock, & Brown, 2010).
- 7.2. Identify the level of mixing (i.e., fully mixed [across data collection, analysis, and interpretation] vs. partially mixed [only at interpretation stage]; Leech & Onwuegbuzie, 2009).
- 7.3. Identify the time orientation (sequential or concurrent) (Leech & Onwuegbuzie, 2009).
- 7.4. Identify the emphasis of approaches (equal approaches vs. one is more dominant; Leech & Onwuegbuzie, 2009).
- 7.5. Identify the strand/phases of research, methods/data, stage of research process, integrated/interactive/systemic nature, iterative nature, synergistic nature (Nastasi, Hitchcock, & Brown, 2010).
- 7.6. Specify the quantitative research design (i.e., historical, descriptive, correlational, causal-comparative/quasi-experimental, and experimental; Onwuegbuzie & Frels, in press).
- 7.7. Specify the qualitative research design (e.g., biography, ethnographic, auto-ethnography, oral history, phenomenological, case study, grounded theory; Creswell, 2013).

Implement**8. Collect Data**

- 8.1. Identify which of the 30 between-strategies mixed data collection combinations (e.g., combining quantitative questionnaires with qualitative interviews) and/or six within-strategies mixed data collection combinations (e.g., combining quantitative observations with qualitative observations) apply (Teddlie & Tashakkori, 2009).
- 8.2. Present information about all quantitative instruments and the process of administration.
- 8.3. Delineate information about score reliability and score validity of all quantitative instruments (Onwuegbuzie & Daniel, 2002, 2004, 2005; Thompson, 2003).
- 8.4. Present information about all qualitative instruments and the process of administration.

9. Analyze Data

- 9.1. Determine each of the 13 mixed analysis decisions (i.e., rationale/purpose for conducting the mixed analysis, philosophy underpinning the mixed analysis, number of data types that will be analyzed, number of data analysis types that will be used, time sequence of the mixed analysis, level of interaction between quantitative and qualitative analyses, priority of analytical components, number of analytical phases, link to other design components, phase of the research process when all analysis decisions are made, type of generalization, analysis orientation, crossover nature of analysis; Onwuegbuzie & Combs, 2010).
- 9.2. Outline the mixed data analysis strategy (i.e., data reduction, data display, data transformation, data correlation, data consolidation, data comparison, and data integration; Onwuegbuzie & Teddlie, 2003).
- 9.3. Provide relevant descriptive and inferential statistics for each statistical analysis (Nimon, 2011; Onwuegbuzie & Daniel, 2003, 2005).
- 9.4. Discuss the extent to which the assumptions (e.g., normality, independence, equality of variances) that underlie the analyses were met, as well as any observations that might have distorted the findings (e.g., missing data, outliers; Onwuegbuzie & Daniel, 2003, 2005).
- 9.5. Specify the statistical software used (e.g., SPSS, SAS).

- 9.6. Specify where the responsibility or authority for the creation of categories resided (i.e., participants, programs, investigative, literature, or interpretive), what the grounds were on which one could justify the existence of a given set of categories (i.e., external, rational, referential, empirical, technical, or participative), what was the source of the name used to identify a given category (i.e., participants, programs, investigative, literature, or interpretive), and at what point during the research process the categories were specified (i.e., a priori, a posteriori, or iterative; Conostas, 1992).
- 9.7. Specify the name of the technique used to analyze the qualitative data (e.g., content analysis method of constant comparison, discourse analysis, componential analysis, keywords in context, analytic induction, word count, domain analysis, taxonomic analysis; Onwuegbuzie & Denham, 2014).
- 9.8. Specify the computer-assisted qualitative data analysis software used (e.g., QDA Miner, MaxQDA, NVivo, Atlas-ti).

10. Legitimate Data

- 10.1. Identify the threats to internal validity and external validity and outline the steps taken to address each of these threats to internal validity and external validity (Onwuegbuzie, 2003).
- 10.2. Identify the threats to measurement validity and outline the steps taken to address each of these threats to measurement validity (i.e., concurrent validity, predictive validity, face validity, item validity, sampling validity, substantive validity, structural validity, convergent validity, discriminant validity, divergent validity, outcome validity, generalizability; Onwuegbuzie, Daniel, & Collins, 2009).
- 10.3. Discuss the threats to trustworthiness, credibility, dependability, authenticity, verification, plausibility, applicability, confirmability, and/or transferability of data and outline all verification procedures used (Onwuegbuzie & Leech, 2007b; Rocco, 2010; Storberg-Walker, 2012; Tracy, 2010).
- 10.4. Discuss mixed research legitimization types (i.e., sample integration legitimization, insider–outsider legitimization, weakness minimization legitimization, sequential legitimization, conversion legitimization, paradigmatic mixing legitimization, commensurability legitimization, multiple validities legitimization, and political legitimization; Onwuegbuzie & Johnson, 2006).
- 10.5. Use debriefing interviews to promote authenticity and transparency in mixed research (Collins, Onwuegbuzie, Johnson, & Frels, 2013).

11. Interpret Data

- 11.1. Interpret relevant types of significance of the quantitative findings (i.e., statistical significance, practical significance, clinical significance, and economic significance; Leech & Onwuegbuzie, 2004).
- 11.2. Conduct post-hoc power analysis for all statistically nonsignificant findings (Onwuegbuzie & Leech, 2004b).
- 11.3. Interpret the significance (i.e., meaning) of qualitative findings (Onwuegbuzie & Leech, 2004a).
- 11.4. Discuss criteria for evaluating findings in mixed research studies (i.e., within-design consistency, conceptual consistency, interpretive agreement, interpretive distinctiveness, design suitability, design fidelity, analytic adequacy, interpretive consistency, theoretical consistency, integrative efficacy; Teddlie & Tashakkori, 2009).
- 11.5. Determine quality of inferences (i.e., planning quality, design quality, data quality, interpretive rigor, inference transferability, reporting quality, synthesizability, utility; O’Cathain, 2010).

Disseminate Results

12. Write Research Report

- 12.1. Describe all steps of the mixed research process (Collins, Onwuegbuzie, & Sutton, 2006; Creswell, Klassen, Plano Clark, & Smith, 2011).
- 12.2. Describe the context in which the mixed research study took place (Leech, Onwuegbuzie, & Combs, 2011).
- 12.3. Ensure that the mixed research report is accurate and complete; does not distort differences within and among individuals and groups; is free from plagiarism or misrepresentation of the ideas and conceptualizations of other scholars; and contains findings that are adequately accessible for reanalysis, further analysis, verification, or replication (Leech, Onwuegbuzie, & Combs, 2011).
- 12.4. Present all ethical considerations that were addressed in the study (e.g., informed consent, confidentiality, incentives, funding sources, potential conflicts of interest, biases; American Psychological Association (APA), 2010).
- 12.5. Specify study approval in accordance with an institutional review board either in the report or in the cover letter submitted to the editor (APA, 2010).

13. Reformulate Research Question(s)

- 13.1. Present recommendations for future research that culminate in a validation, replication, or extension of the underlying study (Collins, Onwuegbuzie, & Sutton, 2006).
- 13.2. Suggest the type of reformulated research question(s) (i.e., separate questions only, general overarching mixed methods question, hybrid mixed methods issue question, mixed methods procedural/mixing questions, combination questions, independent questions, dependent questions, predetermined questions, emergent questions; Plano Clark & Badice, 2010).

Adapted from Leech, N. L., & Onwuegbuzie, A. J. (2010). Guidelines for conducting and reporting mixed research in the field of counseling and beyond. *Journal of Counseling and Development, 45*, 68–69. Copyright © 2010 by the American Counseling Association.

articulates her/his philosophical proclivities in terms of philosophical assumptions and stances in relation to all components, claims, actions, and uses in a mixed research study” (p. 855). Further, the mixed researcher should be aware of, and make clear in the subsequent report, how her/his philosophical stance is mapped onto each mixed research study. For example, if a mixed researcher assumes some form of pragmatist stance (cf. Biesta, 2010), then he or she likely would think pragmatically throughout the mixed research study. And this line of thinking should be made clear to the reader.

Importantly, the mixed researcher should make it clear at every step of the research formulation stage—both in the conduct and reporting—how the quantitative and qualitative research components interact with each other. In particular, as part of the mixed research goal, from the onset, it is essential that the researcher determines the generalization goal. Onwuegbuzie, Slate, Leech, and Collins (2009) identified the following five major types of generalizations that researchers can make (a) *external (statistical) generalizations* (i.e., making generalizations, judgments, predictions, or inferences on data yielded from a representative statistical [i.e., optimally large and random] sample to the *population* from

which the sample was drawn [i.e., universalistic generalizability]); (b) *internal (statistical) generalizations* (i.e., making generalizations, judgments, predictions, or inferences on data obtained from one or more representative or elite study participants [e.g., key informants, subsample members] to the *sample* from which the participant[s] was selected [i.e., particularistic generalizability]); (c) *analytic generalizations* (i.e., “the investigator is striving to generalize a particular set of [case study] results to some broader theory”; Yin, 2009, p. 43) and are “applied to wider theory on the basis of how selected cases ‘fit’ with general constructs”; Curtis, Gesler, Smith, & Washburn, 2000, p. 1002); (d) *case-to-case transfer* (i.e., making generalizations, judgments, or inferences from one case to another [similar] case; Miles & Huberman, 1994); and (e) *naturalistic generalization* (i.e., each reader makes generalizations entirely, or at least in part, from her/his personal or vicarious experiences; Stake & Trumbull, 1982). As noted by Onwuegbuzie et al. (2009), both qualitative and quantitative research studies, and studies utilizing mixing techniques can generate any of these five types of generalization. Knowledge of the generalization goal is essential because it helps the researcher to determine the sample size, sampling scheme, and emphasis between the quantitative phase(s) and qualitative phase(s). For example, if the goal of the mixed research is to make an external statistical generalization, then, optimally, it suggests a large and random sample is needed, likely with more emphasis on the quantitative phase(s). If, however, the goal is to make analytic generalizations or case-to-case transfer, then information-rich cases are needed, likely with more emphasis on the qualitative phase(s).

Alongside the notion of generalizations is the concept of what Collins and Onwuegbuzie (2013) called *interpretive consistency*, which refers to the degree of consistency between the sampling design (e.g., type of sampling schemes [i.e., purposive vs. random], sampling scheme [e.g., stratified random sampling, cluster sampling, convenience sampling, criterion sampling; cf. Onwuegbuzie & Collins, 2007; Teddlie & Yu, 2007], sample size, subsample size[s], group size[s] per approach, number of observational units per participant) and the inferences that stem from the ensuing findings. Interpretive consistency means that the type of generalization made by the researcher is justifiable, given the sampling design. If the sample design does not warrant the generalization made, then some degree of *interpretive inconsistency* occurs (Onwuegbuzie & Collins, 2014). For instance, whether generated randomly or purposively, a small sample size should never be used to make external statistical generalizations either to the population from which the sample was drawn or to a different population. Similarly, a small sample size of key informants (e.g., $n = 1$) should not be used to make internal statistical generalizations to a relatively large group of sample members from which the key informant(s) was selected. Additionally, a small sample size should not be used to make analytic generalizations about a phenomenon when the mixed researcher’s goal is to obtain an insight into an issue or to redraw a generalization, as is the goal when instrumental case studies are conducted (Stake, 2005).

Also, findings are not transferable (e.g., case-to-case transfer) if the mixed researcher has not collected an inadequate amount of data (e.g., interview data, observational data) such that saturation has occurred—whether data saturation (i.e., occurring when information occurs so repeatedly that the researcher can expect it and wherein collecting more data appears to have no additional interpretive worth; Sandelowski, 2008; Saumure & Given, 2008) or theoretical saturation (i.e., occurring when the researcher can conclude that her/his emergent theory has been developed adequately to fit any future data collected; Sandelowski, 2008). To this end, whenever possible, researchers should conduct an a priori power analysis to ensure that the sample size(s) for the quantitative phase of a mixed research study is adequate (Onwuegbuzie & Daniel, 2005). With respect to the qualitative phase(s), among other explanations, researchers should provide a rationale for their sample size(s)—what Onwuegbuzie and Leech (2007a) refer to as conducting a qualitative power analysis—such as that provided by Guest, Bunce, and Johnson (2006).

With very few exceptions (e.g., mixed research designs in which theory emerges from the data alone—as is the case for Johnson, McGowan, and Turner's (2010) mixed methods version of grounded theory that they call mixed methods grounded theory designs [MM-GT])—the review of the literature plays a central role in the research formulation process. As such, mixed researchers should explicate the role that the literature review played. In particular, researchers should make clear which of the nine types of literature reviews, identified by Onwuegbuzie and Frels (in press), was utilized, namely: four major types of narrative review (i.e., general reviews, theoretical reviews, methodological reviews, and historical reviews.), four major types of systematic reviews (i.e., meta-analysis, rapid review, meta-summary, and meta-synthesis), or one type of literature review that involves combining a narrative review and a systematic review (i.e., integrative review). Whatever form of literature review is conducted to inform the researcher's study, it should be comprehensive, current, and rigorous, containing sources that have been critiqued (cf. Dellinger & Leech, 2007; Leech et al., 2010), as well as compared and contrasted, with clear connections being made between the sources presented and the present investigation (Boote & Beile, 2005). Also, the theoretical/conceptual/practical framework should be delineated clearly (Lester, 2005).

Indubitably, the most important role of the mixed researcher-as-author is to convince the reader in general and the HRD reviewer(s) and editor(s) in particular that a mixed research study was more appropriate than was a monomethod study—that is, the mixed researcher must show the value added nature of using mixed research techniques (Collins et al., 2006). Thus, as outlined by Collins et al. (2006), the mixed researcher should outline the rationale (i.e., participant enrichment, instrument fidelity, treatment integrity, and significance enhancement) and purpose (e.g., complementarity, initiation, triangulation, expansion, development; Greene, Caracelli, & Graham, 1989) for utilizing mixed research techniques.

Research questions play a pivotal role in the mixed research process, especially at the research formulation stage (Collins et al., 2006). As identified by Plano Clark and Badice (2010, pp. 290–292), mixed research can be utilized to address the following types of research questions: *separate research questions* (i.e., one or more quantitative research questions coupled with one or more qualitative research questions), *general overarching mixed methods research questions* (i.e., broad research questions that are addressed via the use of both quantitative research approaches and qualitative research approaches), *hybrid mixed methods issue research questions* (i.e., one question that contains two distinct components such that a quantitative research approach is used to address one component and a qualitative research approach is used to address the other component), *mixed methods procedural/mixing research questions* (i.e., narrow questions that necessitate integration of the qualitative and quantitative strands of the research study), *combination research questions* (i.e., at least one mixed methods research question combined with separate quantitative and qualitative research questions), *independent research questions* (i.e., two or more research questions that are related, with each question being independent of the results of the other research question[s]), *dependent research questions* (i.e., research questions that are dependent on the results stemming from addressing another research question[s]), *predetermined research questions* (i.e., research questions that are based on the extant literature, practice, personal characteristics, and/or disciplinary considerations that are posed at the beginning of the research study), and *emergent research questions* (i.e., new or modified research questions that come to the fore at some point during the research study, namely, the research design, data collection, data analysis, or data interpretation phase).

Research Planning Stage

The research planning stage comprises two main interactive and recursive steps: selecting the sampling design and selecting the mixed research design. With respect to the sampling design, for each quantitative and qualitative phase of the mixed research study, researchers must make sampling decisions regarding the sampling scheme, sample size, subsample size(s), group size(s) per approach, and number of observational units per participant. However, not only must researchers make sampling decisions about each quantitative and qualitative phase, they also must make decisions about the interface between the qualitative and quantitative samples, which comprises time orientation (i.e., concurrent vs. sequential) and the relationship between the quantitative and qualitative samples (identical [i.e., exactly the same participants are involved in both the qualitative and quantitative phases of the study]; parallel [i.e., samples for the qualitative and quantitative components of the research are different but are drawn from the same population of interest]; nested [i.e., participants selected for one phase of the study represent a subset of those sample members selected for the other component of the

research]; multilevel [i.e., two or more sets of samples are extracted from different levels of the population of interest]), yielding eight different types of major sampling designs: concurrent identical, concurrent parallel, concurrent nested, concurrent multilevel, sequential identical, sequential parallel, sequential nested, and sequential multilevel (Onwuegbuzie & Collins, 2007). In making sampling decisions, the mixed researcher should keep in mind the type of generalization(s) of interest and the goal of attaining interpretive consistency (cf. Step 1), which represent key aspects of rigor. To help researchers keep these important features, researchers might consider using Onwuegbuzie, Collins, and Frels's (2013) conceptualization of the research process. These authors mapped Bronfenbrenner's (1979) ecological systems model onto the qualitative, quantitative, and mixed research process to yield four levels of research that they coined as *micro-research studies* (i.e., Level 1: wherein one or more persons or groups are studied within his/her/their immediate environment[s]), *meso-research studies* (i.e., Level 2: wherein one or more individuals or groups are studied within other systems in which he/she/they spends time), *exo-research studies* (i.e., Level 3: wherein one or more individuals or groups are studied within systems by which he/she/they might be influenced but of which he/she/they do not belong directly), and *macro-research studies* (i.e., Level 4: wherein one or more individuals or groups are studied within the larger cultural world or society surrounding him/her/them). Identifying the level of study should help researchers make sampling decisions that reduce the likelihood of interpretive inconsistent generalizations being made (Onwuegbuzie & Collins, 2014), thereby increasing the rigor and, subsequently, the ethical nature of the mixed research study.

With respect to the mixed research design, at the most basic level, researchers should determine the level of mixing (i.e., fully mixed [i.e., mixing occurring across data collection, analysis, and interpretation] vs. partially mixed [i.e., occurring only at interpretation stage]); time orientation of the quantitative and qualitative approaches (i.e., sequential vs. concurrent); and emphasis of the quantitative and qualitative approaches (i.e., [approximately] equal approaches vs. one approach is more dominant) (Leech & Onwuegbuzie, 2009). At a more complex level, researchers should make decisions about the strand/phases of the mixed research study, methods/data, and stage of research process, as well as the integrated/interactive/systemic, iterative, and synergistic nature of the mixed research study (Nastasi, Hitchcock, & Brown, 2010).

Research Implementation Stage

The next stage of the mixed research process, the research implementation stage, comprises the following four interactive and cyclical steps: data collection, data analysis, data validation/legitimation, and data interpretation. With respect to data collection, mixed researchers should identify which of Teddlie and Tashakkori's (2009) 30 between-strategies mixed data collection

combinations (e.g., combining quantitative questionnaires with qualitative interviews) and/or six within-strategies mixed data collection combinations (e.g., combining quantitative observations with qualitative observations) apply. For each of the quantitative and qualitative phases, researchers should make clear the nature of each instrument used. For example, with regard to quantitative instruments, researchers should specify the format of the items (e.g., multiple-choice, open-ended, Likert-format), the number of items on the instrument, the number of response options, and what construct(s) the instrument measures. Also, whenever possible, researchers should present one or more sample items.

Similarly, with respect to qualitative instruments, transparency also is needed. For instance, researchers should consider delineating as many of the following procedural elements as possible: the structure of the interview (e.g., semistructured, fully structured); the format of the interviews (e.g., formal vs. informal); where the interviews took place; who conducted the interviews; when, where, and how long each interview was; how many interview questions were asked; the format of questions (basic descriptive, follow-up, experience/example, simple clarification, structural/paradigmatic, and comparison/contrast; e.g., Janesick, 2004); whether the questions were presented in the same order to each participant; the number of times each participant was interviewed; and who transcribed the recorded interview responses.

As noted by Onwuegbuzie and Combs (2010), the data analysis step is the most complex step in the mixed research process because, optimally, it involves making decisions about the following 13 criteria: rationale/purpose for conducting the mixed analysis (complementarity, initiation, triangulation, expansion, development; Greene et al., 1989); philosophy underpinning the mixed analysis (e.g., some form of pragmatism; Biesta, 2010); number of data types that will be analyzed; number of data analysis types that will be used; time sequence of the mixed analysis (quantitative and qualitative analyses conducted concurrently or sequentially); level of interaction between quantitative and qualitative analyses (i.e., parallel mixed analysis [i.e., quantitative and qualitative analyses are independent and kept separate; Teddlie & Tashakkori, 2009] vs. integrated analysis); priority of analytical components (i.e., quantitative-dominant, qualitative-dominant, equal-status); number of analytical phases; link to other design components (e.g., sequential analysis linked to a sequential design); phase of the research process when all analysis decisions are made (e.g., data reduction, data display, data transformation, data correlation, data consolidation, data comparison, data integration; Onwuegbuzie & Teddlie, 2003); type of generalization (i.e., external [statistical] generalization, internal [statistical] generalization, analytic generalization; case-to-case transfer, naturalistic generalization; Onwuegbuzie et al., 2009); analysis orientation (i.e., case-oriented, variable-oriented, process-/experience-oriented; Onwuegbuzie et al., 2009); and cross-over nature of analysis (i.e., quantitative analysis of quantitative data and qualitative analysis of qualitative data vs. one

or more analysis types associated with one tradition [e.g., qualitative analysis] being used to analyze data associated with a different tradition [e.g., quantitative data]).

With respect to quantitative data analysis, researchers should specify which of the 58 classes of established parametric quantitative analysis approaches and select nonparametric quantitative analysis approaches identified by Onwuegbuzie, Leech, and Collins (2011) was used, which are grouped under the following categories: *measurement techniques* (e.g., item response theory, exploratory factor analysis); *approaches for assessing one variable at a time* (e.g., descriptive analyses, single-subject analyses); *approaches for assessing differences through variance analysis* (e.g., analysis of variance; multiple analysis of variance; hierarchical linear modeling); *approaches for assessing group membership/relationships* (e.g., chi-square analysis, cluster analysis, Q methodology, discriminant analysis); *approaches for assessing time and/or space* (e.g., time series analysis, survival analysis, correspondence analysis, geostatistics); *approaches for explaining or predicting relationships between variables* (e.g., linear regression, regression discontinuity, logistic regression, structural equation modeling, social network analysis, propensity score analysis); or *some nontraditional type of analysis* (e.g., Bayesian analyses). Importantly, researchers should present the score reliability coefficients for all quantitative instruments used (Thompson, 2003). Also, in many instances, researchers should report effect sizes and confidence intervals (Callahan & Reio, 2006; Nimon, 2011). Further, as noted by the American Psychological Association (2010), “When reporting the results of inferential statistical tests or when providing estimates of parameters or effect sizes, include sufficient information to help the reader fully understand the analyses conducted and possible alternative explanations for the outcomes of those analyses” (p. 33). In addition, researchers should discuss the extent to which all pertinent statistical assumptions held—which more than 90% of authors fail to do (Onwuegbuzie & Daniel, 2005).

With respect to qualitative data analysis, researchers should specify which of the 34 qualitative approaches (i.e., data analyses that represent whole systems) identified by Onwuegbuzie and Denham (2014) was used, namely: word count, semiotics, text mining, discourse analysis, classical content analysis, schema analysis, latent content analysis, manifest content analysis, keywords-in-context, constant comparison analysis, membership categorization analysis, narrative analysis, conversation analysis, ethnographic decision models, critical discourse analysis, frame/framing analysis, social semiotic analysis, domain analysis, taxonomic analysis, componential analysis, theme analysis, dialogical narrative analysis, qualitative comparative analysis, multimodal discourse analysis, dimensional analysis, framework analysis, qualitative secondary data analysis, interpretative phenomenological analysis, consensual qualitative research, situational analysis, micro-interlocutor analysis, rhetorical analysis, systematic data integration, and/or nonverbal communication analysis.

Alternatively, or in addition, researchers should indicate which qualitative data analysis technique (i.e., data analyses that represent part of a system) was used such as Miles and Huberman's (1994) 19 within-case analyses and 18 cross-case analyses. Or researchers should specify which qualitative data analysis strategy (i.e., a single step in the qualitative data analysis process) was used such as Saldaña's (2012) 32 coding strategies (e.g., *values coding*, wherein codes are applied that consist of three elements, namely, value, attitude, and belief, in order to examine a participant's perspectives or worldview). Also, as conceptualized by Constat (1992, pp. 257–261), researchers should make clear the following: (a) who has the responsibility or authority for developing the codes, categories, and/or themes (i.e., participants, programs, investigative, literature, or interpretive); (b) what the justification was for the development of a given set of codes, categories, and/or themes (i.e., external, rational, referential, empirical, technical, or participative); (c) to whom to attribute the source that was used to identify a given set of codes, categories, and/or themes (i.e., participants, programs, investigative, literature, or interpretive); and (d) at what point during the research process were the codes, categories and/or themes developed (i.e., *a priori*, *a posteriori*, or iterative).

With respect to validity/legitimation, mixed researchers have the challenge of delineating threats to validity/legitimation pertinent to both the quantitative and qualitative phases, as well as the threat to legitimation that ensue from the process of mixing quantitative and qualitative approaches. Researchers might consider using a comprehensive framework for assessing validity/legitimation of the quantitative findings such as Onwuegbuzie's (2003) *Qualitative Legitimation Framework*, which contains 50 different threats to internal and external validity that might occur at the research design/data collection, data analysis, and/or data interpretation stages of the quantitative research process. Validity/legitimation of the qualitative findings can be assessed via comprehensive frameworks such as Onwuegbuzie and Leech's (2007b) *Quantitative Legitimation Framework*, which contains 29 elements of legitimation for qualitative research at the following three recursive stages of the research process: research design/data collection, data analysis, and data interpretation (see also, Rocco, 2010; Storberg-Walker, 2012; Tracy, 2010). Finally, with respect to legitimation of the mixed research findings, researchers might consider using Onwuegbuzie and Johnson's (2006) *Mixed Research Legitimation Framework*, which contains the following nine legitimation types: sample integration legitimation, insider-outsider legitimation, weakness minimization legitimation, sequential legitimation, conversion legitimation, paradigmatic mixing legitimation, commensurability legitimation, multiple validities legitimation, and political legitimation.

With respect to data interpretation, two excellent frameworks that mixed researchers might consider using are O'Cathain's (2010) *Quality Framework* and Teddlie and Tashakkori's (2009) *Integrative Framework for Inference Quality*. Using O'Cathain's (2010) framework involves assessing the mixed

research study via the following eight quality indices: planning quality, design quality, data quality, interpretive rigor, inference transferability, reporting quality, synthesizability, and utility. In contrast, Teddlie and Tashakkori's (2009) framework contains the following 10 elements: design suitability, design fidelity, within-design consistency, analytic adequacy, interpretive consistency, theoretical consistency, interpretive agreement, interpretive distinctiveness, integrative efficacy, and interpretive correspondence. In using the findings for the purpose of meaning making, where appropriate, mixed researchers should consider using as many of the following four types of significance as possible: statistical significance (e.g., via p values, confidence intervals), practical significance (e.g., via effect sizes), clinical significance (i.e., assessing difference to the quality of life of the participants via the reliable change index that indicates the amount of change and the normative comparisons that represent how distinguishable the individual is from a normative sample), and economic significance (e.g., via cost-effectiveness ratio, cost-benefit ratio, cost-utility ratio, cost-feasibility ratio, cost-sensitivity ratio) (Leech & Onwuegbuzie, 2004).

Research Dissemination Stage

The final stage of the mixed research process, the research dissemination stage, comprises writing the research report and reformulating the research question(s) (for future researchers to study). When writing the mixed research report, researchers should present all steps and phases of the mixed research process as clearly as possible. Obviously, in so doing, they should keep in mind the *HRDQ* page length requirements. According to the *HDRQ* website, "Manuscript page total should be limited to approximately 35 pages all inclusive of the text, tables, figures, and references" (para 5). Although this page limit is reasonable for monomethod research studies, mixed researchers typically will need (close to) all 35 pages to illustrate the rigor of their studies, as well as to combine inferential statistics and rich quotations, among other vital information. Interestingly, as authors of this editorial, we had difficulty meeting the *HRDQ* page restrictions. Thus, we are encouraged by the use of the word *approximately* in the author guidelines. Indeed, we hope that this means that the *HRDQ* editors will show sensitivity and leniency for mixed research articles so that, within reason, authors of mixed research studies are not forced to omit important information that might adversely affect the integrity of their articles. Another recommendation that we have for the *HRDQ* editors is that they include a sufficient number of reviewers who have experience conducting mixed research and writing mixed research articles so that, whenever possible, they can be assigned mixed research manuscripts that are submitted for consideration for publication to *HDRQ* and to other journals that routinely publish HRD articles. Such reviewers will be in the best position to evaluate mixed research manuscripts and, in the words of *HRDQ* Editor Professor Andrea D. Ellinger, to "offer ... suggestions and identify ... how authors can address problematic issues (if such problems are not

fatal flaws that prevent publication) [that] often results in a high-quality review that effectively assists in the disposition of a manuscript by the editorial team” (Ellinger et al., 2013, pp. 419).

Conclusions

Nimon (2011) stated, “I encourage the editors of HRD journals to work together to develop a set of standards for HRD research” (p. 393). Thus, the major goal of our editorial was to take an initial step toward developing such criteria, with our taxonomy provided in Figure 1. Whatever phenomena are being studied using mixed research techniques, it is important that mixed researchers maintain a mixed methodological way of thinking in the conceptualization, design, implementation, and dissemination phases of their mixed research studies. We contend that our taxonomy is far-reaching because it can be utilized by both qualitative researchers and quantitative researchers. In any case, we hope that our evidence-based taxonomy represents a step in the appropriate direction for enhancing rigor and, in turn, increasing ethicalness in mixed research studies (as well as in qualitative research and quantitative research studies), thereby reducing the incidence of interpretive inconsistent generalizations being made, and, ultimately, enhancing meaning making—bringing researchers close to *Verstehen* of phenomena. We encourage other authors to build on our taxonomy. However, in the meantime, we hope that by reading this editorial, researchers who are interested in submitting mixed research manuscripts to *HRDQ* and to other journals that routinely publish HRD-based articles will be in a better position to write manuscripts that are publishable. Such an outcome can only be beneficial for researchers, reviewers, editors, readers, and, most importantly, *HRDQ* stakeholders.

Appendix: Decision Rules for Classifying Articles Published in *HRDQ*

Rule 1. Although the addition of qualitative information to a largely quantitative study would typically lead to a designation of mixed research, studies were not coded as representing mixed research if the addition of the qualitative information was not systematic and/or planned. For instance, reporting spontaneous, anecdotal comments from study participants in the introduction or discussion section of a quantitative study did not result in a mixed research designation. Similarly, studies were not coded as representing mixed research if the addition of the quantitative information was not systematic and/or planned.

Rule 2. Mere use of interview methods during data collection did not automatically result in a mixed research designation. Furthermore,

structured or semistructured interviews that generated quantitative data, such as frequency counts or a list of target behaviors, were not considered representative of qualitative research.

Rule 3. In studies that used small sample sizes to evaluate quantitatively intervention effectiveness, detailed background information about participant(s) was not coded as representing a qualitative component.

Rule 4. Reporting planned collection of qualitative data for the purpose of assessing or verifying the validity of an intervention resulted in a mixed research designation (assuming that quantitative data were collected solely for the purpose of evaluating treatment outcomes). Even intervention studies that reported only quantitative analyses in the results section were still coded as representing mixed research if the brief discussion of treatment integrity included qualitative data.

Rule 5. Mixed research studies in which the sole qualitative component involved an assessment of treatment integrity were coded as quantitative dominant because the information about treatment integrity was not considered as being the central component of the study.

Rule 6. Mixed research studies in which the qualitative component was essential in order for the remainder of the study to be carried out, and those studies that reported and analyzed both qualitative and quantitative data were coded as representing mixed research. For instance, studies employing qualitative methods (e.g., focus groups, open-ended questionnaires) in order to develop the measurement tool that was used in the remainder of the study were designated as representing mixed research because the completion of the study was contingent on the creation of the instrument.

Rule 7. Content analyses were coded as quantitative if the results of the content analysis were reported numerically (e.g., this study). If the content analysis yielded themes that were not quantified in any way, the study was coded as representing qualitative research.

Rule 8. Highlighting case examples from a larger quantitative study did not result in a mixed research designation unless the case example section was augmented by new qualitative data (as opposed to simply an in-depth examination of the quantitative data yielded from the case examples who were participants in the larger quantitative study).

Adapted from Powell et al. (pp. 306–307). Copyright 2008 by Wiley Periodicals, Inc.

References

- Alise, M. A., & Teddlie, C. (2010). A continuation of the paradigm wars? Prevalence rates of methodological approaches across the social/behavioral sciences. *Journal of Mixed Methods Research, 4*, 103–126. doi:10.1177/1558689809360805
- American Educational Research Association. (2006). Standards for reporting on empirical social science research in AERA publications. *Educational Researcher, 35*(6), 33–40.

- American Psychological Association (APA). (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.
- Benge, C. L. (2012). *Effect of cartoon mnemonics and revised definitions on the acquisition of tier-two vocabulary words among selected fifth-grade students*. (Unpublished dissertation), Sam Houston State University, Huntsville, Texas.
- Biesta, G. (2010). Pragmatism and the philosophical foundations of mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), *Sage handbook of mixed methods in social & behavioral research* (2nd ed., pp. 95–117). Thousand Oaks, CA: Sage.
- Boote, D. N., & Beile, P. (2005). Scholars before researchers: On the centrality of the dissertation literature review in research preparation. *Educational Researcher*, 34(6), 3–15. doi:10.3102/0013189X034006003
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.
- Callahan, J. L., & Reio, T. (2006). Making subjective judgments in quantitative studies: The importance of using effect sizes and confidence intervals. *Human Resource Development Quarterly*, 17, 159–174. doi:10.1002/hrdq.167
- Cameron, R., & Molina-Azorin, J. F. (2011). The acceptance of mixed methods in business and management research. *International Journal of Organizational Analysis*, 19, 256–271. doi:10.1108/19348831111149204
- Collins, K. M. T., & Onwuegbuzie, A. J. (2013). Establishing interpretive consistency when mixing approaches: Role of sampling designs in program evaluations. *New Directions for Evaluation*, 138, 85–95. doi:10.1002/ev.20060
- Collins, K. M. T., Onwuegbuzie, A. J., & Johnson, R. B. (2012). Securing a place at the table: Introducing legitimation criteria for the conduct of mixed research. *American Behavioral Scientist*, 56, 849–865. doi:10.1177/0002764211433799
- Collins, K. M. T., Onwuegbuzie, A. J., Johnson, R. B., & Frels, R. K. (2013). Practice note: Using debriefing interviews to promote authenticity and transparency in mixed research. *International Journal of Multiple Research Approaches*, 7, 271–283.
- Collins, K. M. T., Onwuegbuzie, A. J., & Sutton, I. L. (2006). A model incorporating the rationale and purpose for conducting mixed methods research in special education and beyond. *Learning Disabilities: A Contemporary Journal*, 4, 67–100.
- Collins, K. M. T., Onwuegbuzie, A. J., & Sutton, I. L. (2007, February). *The role of mixed methods in special education*. Paper presented at the annual meeting of the Southwest Educational Research Association, San Antonio, TX.
- Constas, M. A. (1992). Qualitative data analysis as a public event: The documentation of category development procedures. *American Educational Research Journal*, 29, 253–266. doi:10.3102/00028312029002253
- Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Thousand Oaks, CA: Sage.
- Creswell, J. W., Klassen, A. C., Plano Clark, V. L., & Smith, K. C. (2011). Best practices for mixed methods research in the health sciences. Office of Behavioral and Social Sciences Research National Institutes of Health. Retrieved from http://obsr.od.nih.gov/mixed_methods_research
- Curtis, S., Gesler, W., Smith, G., & Washburn, S. (2000). Approaches to sampling and case selection in qualitative research: Examples in the geography of health. *Social Science and Medicine*, 50, 1001–1014. doi:10.1016/S0277-9536(99)00350-0
- Dellinger, A., & Leech, N. L. (2007). A validity framework: A unified approach to evaluating validity of empirical research. *Journal of Mixed Methods Research*, 1, 309–332. doi:10.1177/1558689807306147
- Denzin, N. K., & Lincoln, Y. S. (2011). Introduction: The discipline and practice of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Sage handbook of qualitative research* (4th ed., pp. 1–25). Thousand Oaks, CA: Sage.
- Ellinger, A. D., Anderson, V., Gubbins, C., Lunn, M. L., Nimon, K. F., Sheehan, M., et al. (2013). The generous spirit of the peer review process: Perspectives and insights from the HRDQ

- editorial team on providing high-quality reviews. *Human Resource Development Quarterly*, 22, 417–428. doi:10.1002/hrdq
- Greene, J. C. (2007). *Mixed methods in social inquiry*. San Francisco, CA: Jossey-Bass.
- Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, 11, 255–274. doi:10.3102/01623737011003255
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, 18, 59–82. doi:10.1177/1525822X05279903
- Halpern, E. S. (1983). *Auditing naturalistic inquiries: The development and application of a model*. Unpublished doctoral dissertation, Indiana University.
- Hart, L. C., Smith, S. Z., Swars, S. L., & Smith, M. E. (2009). An examination of research methods in mathematics education. *Journal of Mixed Methods Research*, 3, 26–41. doi:10.1177/1558689808325771
- Hibbard, S., & Onwuegbuzie, A. J. (2012, April). *Trends of mixed methods designs in evaluation studies: From 2003 to 2011*. Paper presented at the annual meeting of the American Educational Research Association, Vancouver, British Columbia, Canada.
- Hurmerinta-Peltomaki, L., & Nummela, N. (2006). Mixed methods in international business research: A value-added perspective. *Management International Review*, 46, 439–459.
- Ivankova, N., & Kawamura, Y. (2010). Emerging trends in the utilization of integrated designs in the social, behavioral, and health science. In A. Tashakkori & C. Teddlie (Eds.), *Sage handbook of mixed methods in social & behavioral research* (2nd ed., pp. 581–612). Thousand Oaks, CA: Sage.
- Janesick, V. J. (2000). The choreography of qualitative research design. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 379–399). Thousand Oaks, CA: Sage.
- Janesick, V. J. (2004). *Stretching exercises for qualitative researchers* (3rd ed.). Thousand Oaks, CA: Sage.
- Johnson, R. B., & Christensen, L. (2013). *Educational research: Quantitative, qualitative, and mixed approaches* (5th ed.). Thousand Oaks, CA: Sage.
- Johnson, R. B., McGowan, M. W., & Turner, L. A. (2010). Grounded theory in practice: Is it inherently a mixed method? *Research in the Schools*, 17(2), 65–78.
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14–26. doi:10.1177/1558689806298224
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1, 112–133. doi:10.1525/sp.1960.8.2.03a00030
- Leech, N. L., Dellinger, A. B., Brannagan, K. B., & Tanaka, H. (2010). Evaluating mixed research studies: A mixed methods approach. *Journal of Mixed Methods Research*, 4, 17–31. doi:10.1177/1558689809345262
- Leech, N. L., & Onwuegbuzie, A. J. (2004). A proposed fourth measure of significance: The role of economic significance in educational research. *Evaluation and Research in Education*, 18, 179–198. doi:10.1080/09500790408668317
- Leech, N. L., & Onwuegbuzie, A. J. (2009). A typology of mixed methods research designs. *Quality & Quantity: International Journal of Methodology*, 43, 265–275. doi:10.1007/s11135-007-9105-3
- Leech, N. L., & Onwuegbuzie, A. J. (2010a). Guidelines for conducting and reporting mixed research in the field of stress and coping and beyond. In G. S. Gates, W. H. Gmelch, & M. Wolverson (Series Eds.) & K. M. T. Collins, A. J. Onwuegbuzie, & Q. G. Jiao (Vol. Eds.), *Toward a broader understanding of stress and coping: Mixed methods approaches* (pp. 77–104). The Research on Stress and Coping in Education Series (Vol. 5). Charlotte, NC: Information Age Publishing.
- Leech, N. L., & Onwuegbuzie, A. J. (2010b). Guidelines for conducting and reporting mixed research in the field of counseling and beyond. *Journal of Counseling and Development*, 88, 61–69. doi:10.1002/j.1556-6678.2010.tb00151.x

- Leech, N. L., & Onwuegbuzie, A. J. (2011). Mixed research in counseling: Trends in the literature. *Measurement and Evaluation in Counseling Development*, 44, 169–180. doi:10.1177/0748175611409848
- Leech, N. L., Onwuegbuzie, A. J., & Combs, J. C. (2011). Writing publishable mixed research articles: Guidelines for emerging scholars in the health sciences and beyond. *International Journal of Multiple Research Approaches*, 5, 7–24. doi:10.5172/mra.2011.5.1.7
- Lester, F. K. (2005). On the theoretical, conceptual, and philosophical foundations for research in mathematics education. *ZDM*, 37, 457–467. doi:10.1007/BF02655854
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: Sage.
- Molina-Azorin, J. F., & Cameron, R. (2010). The application of mixed methods in organisational research: A literature review. *Electronic Journal of Business Research Methods*, 8, 95–105. Retrieved from <http://www.ejbrm.com>
- Nastasi, B. K., Hitchcock, J. H., & Brown, L. M. (2010). An inclusive framework for conceptualizing mixed methods design typologies. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (2nd ed., pp. 305–338). Thousand Oaks, CA: Sage.
- Neuendorf, K. A. (2001). *The content analysis guidebook*. Thousand Oaks, CA: Sage.
- Newman, I., Ridenour, C. S., Newman, C., & DeMarco, G. M. P. (2003). A typology of research purposes and its relationship to mixed methods. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 167–188). Thousand Oaks, CA: Sage.
- Niglas, K. (2004). *The combined use of qualitative and quantitative methods in educational research*. (Unpublished doctoral dissertation), Tallinn Pedagogical University, Tallinn, Estonia.
- Nimon, K. (2011). Improving the quality of quantitative research reports: A call for action. *Human Resource Development Quarterly*, 22, 387–394. doi:10.1002/hrdq.20091
- O’Cathain, A. (2010). Assessing the quality of mixed methods research: Towards a comprehensive framework. In A. Tashakkori & C. Teddlie (Eds.), *Sage handbook of mixed methods in social and behavioral research* (2nd ed., pp. 531–555). Thousand Oaks, CA: Sage.
- Onwuegbuzie, A. J. (2003). Expanding the framework of internal and external validity in quantitative research. *Research in the Schools*, 10(1), 71–90.
- Onwuegbuzie, A. J. (2012). Introduction: Putting the *mixed* back into quantitative and qualitative research in educational research and beyond: Moving towards the *radical middle*. *International Journal of Multiple Research Approaches*, 6, 192–219.
- Onwuegbuzie, A. J., & Collins, K. M. T. (2007). A typology of mixed methods sampling designs in social science research. *Qualitative Report*, 12, 281–316. Retrieved from <http://www.nova.edu/ssss/QR/QR12-2/onwuegbuzie2.pdf>
- Onwuegbuzie, A. J., & Collins, K. M. T. (2014). Using Bronfenbrenner’s ecological systems theory to enhance interpretive consistency in mixed research. *International Journal of Research in Education Methodology*, 5, 651–661.
- Onwuegbuzie, A. J., Collins, K. M. T., & Frels, R. K. (2013). Foreword: Using Bronfenbrenner’s ecological systems theory to frame quantitative, qualitative, and mixed research. *International Journal of Multiple Research Approaches*, 7, 2–8.
- Onwuegbuzie, A. J., & Combs, J. P. (2010). Emergent data analysis techniques in mixed methods research: A synthesis. In A. Tashakkori & C. Teddlie (Eds.), *Sage handbook of mixed methods in social and behavioral research* (2nd ed., pp. 397–430). Thousand Oaks, CA: Sage.
- Onwuegbuzie, A. J., & Daniel, L. G. (2002). A framework for reporting and interpreting internal consistency reliability estimates. *Measurement and Evaluation in Counseling and Development*, 35(2), 89–103.
- Onwuegbuzie, A. J., & Daniel, L. G. (2003, February 19). Typology of analytical and interpretational errors in quantitative and qualitative educational research. *Current Issues in Education* [Online], 6(2). Retrieved from <http://cie.asu.edu/volume6/number2>
- Onwuegbuzie, A. J., & Daniel, L. G. (2004). Reliability generalization: The importance of considering sample specificity, confidence intervals, and subgroup differences. *Research in the Schools*, 11(1), 60–71.

- Onwuegbuzie, A. J., & Daniel, L. G. (2005). Evidence-based guidelines for publishing articles in *Research in the Schools* and beyond [Editorial]. *Research in the Schools*, 12(2), 1–11. Retrieved from www.msra.org/download/Rits_editorial_12_2.pdf
- Onwuegbuzie, A. J., Daniel, L. G., & Collins, K. M. T. (2009). A meta-validation model for assessing the score-validity of student teacher evaluations. *Quality & Quantity: International Journal of Methodology*, 43, 197–209. doi:10.1007/s11135-007-9112-4
- Onwuegbuzie, A. J., & Denham, M. (2014). Qualitative data analysis techniques. In L. Meyer (Ed.), *Oxford bibliographies in education*. New York, NY: Oxford University Press. Retrieved from www.oxfordbibliographies.com
- Onwuegbuzie, A. J., & Frels, R. K. (in press). *Seven steps to a comprehensive literature review: A multimodal and cultural approach*. London, England: Sage.
- Onwuegbuzie, A. J., Frels, R. K., Leech, N. L., & Collins, K. M. T. (2011a, April). *A mixed research study of approaches used by mixed research instructors*. Invited paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.
- Onwuegbuzie, A. J., Frels, R. K., Leech, N. L., & Collins, K. M. T. (2011b). A mixed research study of pedagogical approaches and student learning in doctoral-level mixed research courses. *International Journal of Multiple Research Approaches*, 5, 169–199. doi:10.5172/mra.2011.5.2.169
- Onwuegbuzie, A. J., & Johnson, R. B. (2006). The validity issue in mixed research. *Research in the Schools*, 13(1), 48–63.
- Onwuegbuzie, A. J., Johnson, R. B., & Collins, K. M. T. (2009). A call for mixed analysis: A philosophical framework for combining qualitative and quantitative. *International Journal of Multiple Research Approaches*, 3, 114–139. doi:10.5172/mra.3.2.114
- Onwuegbuzie, A. J., & Leech, N. L. (2004a). Enhancing the interpretation of “significant” findings: The role of mixed methods research. *Qualitative Report*, 9(4), 770–792. Retrieved from <http://www.nova.edu/ssss/QR/QR9-4/Onwuegbuzie.pdf>
- Onwuegbuzie, A. J., & Leech, N. L. (2004b). Post-hoc power: A concept whose time has come. *Understanding Statistics*, 3, 201–230. doi:10.1207/s15328031us0304_1
- Onwuegbuzie, A. J., & Leech, N. L. (2006). Linking research questions to mixed methods data analysis procedures. *Qualitative Report*, 11, 474–498. Retrieved from <http://www.nova.edu/ssss/QR/QR11-3/onwuegbuzie.pdf>
- Onwuegbuzie, A. J., & Leech, N. L. (2007a). A call for qualitative power analyses. *Quality & Quantity: International Journal of Methodology*, 41, 105–121. doi:10.1007/s11135-005-1098-1
- Onwuegbuzie, A. J., & Leech, N. L. (2007b). Validity and qualitative research: An oxymoron? *Quality & Quantity: International Journal of Methodology*, 41, 233–249. doi:10.1007/s11135-005-1098-1
- Onwuegbuzie, A. J., Leech, N. L., & Collins, K. M. T. (2011). Toward a new era for conducting mixed analyses: The role of quantitative dominant and qualitative dominant crossover mixed analyses. In M. Williams & W. P. Vogt (Eds.), *The Sage handbook of innovation in social research methods* (pp. 353–384). Thousand Oaks, CA: Sage.
- Onwuegbuzie, A. J., Slate, J. R., Leech, N. L., & Collins, K. M. T. (2009). Mixed data analysis: Advanced integration techniques. *International Journal of Multiple Research Approaches*, 3, 13–33. doi:10.5172/mra.455.3.1.13
- Onwuegbuzie, A. J., & Teddlie, C. (2003). A framework for analyzing data in mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 351–383). Thousand Oaks, CA: Sage.
- Onwuegbuzie, A. J., Witcher, A. E., Collins, K. M. T., Filer, J. D., Wiedmaier, C. D., & Moore, C. W. (2007). Students’ perceptions of characteristics of effective college teachers: A validity study of a teaching evaluation form using a mixed-methods analysis. *American Educational Research Journal*, 44, 113–160. doi:10.3102/0002831206298169
- Plano Clark, V. L., & Badice, M. (2010). Research questions in mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (2nd ed., pp. 275–304). Thousand Oaks, CA: Sage.

- Powell, H., Mihalas, S., Onwuegbuzie, A. J., Suldo, S., & Daley, C. E. (2008). Mixed methods research in school psychology: A mixed methods investigation of trends in the literature. *Psychology in the Schools, 45*, 291–309. doi:10.1002/pits.20296
- Ray, D. C., Hull, D. M., Thacker, A. J., Pace, L. S., Swan, K. L., Carlson, S. E., et al. (2011). Research in counseling: A 10-year review to inform practice. *Journal of Counseling & Development, 89*, 349–359. doi:10.1002/j.1556-6678.2011.tb00099.x
- Rocco, T. S. (2010). Criteria for evaluating qualitative studies. *Human Resource Development International, 13*, 375–378. doi:10.1080/13678868.2010.501959
- Ross, A., & Onwuegbuzie, A. J. (2010). Mixed methods research design: A comparison of prevalence in *JRME* and *AERJ*. *International Journal of Multiple Research Approaches, 4*, 233–245.
- Ross, A., & Onwuegbuzie, A. J. (2012). Prevalence of mixed methods research in mathematics education. *Mathematics Educator, 22*(1), 84–113.
- Ross, A., & Onwuegbuzie, A. J. (2014). Complexity of quantitative analyses used in mixed research articles published in a flagship mathematics education journal. *International Journal of Multiple Research Approaches, 8*, 80–90.
- Saldaña, J. (2012). *The coding manual for qualitative researchers* (2nd ed.). Thousand Oaks, CA: Sage.
- Sandelowski, M. (2008). Theoretical saturation. In L. M. Given (Ed.), *The Sage encyclopedia of qualitative methods* (Vol. 1, pp. 875–876). Thousand Oaks, CA: Sage.
- Saumure, K., & Given, L. M. (2008). Data saturation. In L. M. Given (Ed.), *The Sage encyclopedia of qualitative methods* (Vol. 1, pp. 195–196). Thousand Oaks, CA: Sage.
- Stake, R. E. (2005). Qualitative case studies. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (3rd ed., pp. 443–466). Thousand Oaks, CA: Sage.
- Stake, R. E., & Trumbull, D. J. (1982). Naturalistic generalizations. *Review Journal of Philosophy and Social Science, 7*, 3–12.
- Storberg-Walker, J. (2012). Instructor's corner: Tips for publishing and reviewing qualitative studies in applied disciplines. *Human Resource Development Review, 11*, 254–261. doi:10.1177/1534484312436709
- Tashakkori, A., & Teddlie, C. (Eds.). (2003). *Handbook of mixed methods in social and behavioral research*. Thousand Oaks, CA: Sage.
- Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Thousand Oaks, CA: Sage.
- Teddlie, C., & Tashakkori, A. (2010). Overview of contemporary issues in mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (2nd ed., pp. 1–41). Thousand Oaks, CA: Sage.
- Teddlie, C., & Yu, F. (2007). Mixed methods sampling: A typology with examples. *Journal of Mixed Methods Research, 1*, 77–100. doi:10.1177/2345678906292430
- Thompson, B. (Ed.). (2003). *Score reliability: Contemporary thinking on reliability issues*. Newbury Park, CA: Sage.
- Tracy, S. J. (2010, December). Qualitative inquiry: Eight “big-ten” criteria for excellent qualitative research. *Qualitative Inquiry, 16*, 837–851.
- Wisdom, J. P., Cavaleri, M. A., Onwuegbuzie, A. J., & Green, C. A. (2012). Methodological reporting in qualitative, quantitative, and mixed methods health services research articles. *Health Services Research Journal, 47*(2), 721–745. doi:10.1111/j.1475-6773.2011.01344.x
- Yin, R. K. (2009). *Case study research: Design and methods* (4th ed.). Thousand Oaks, CA: Sage.

Anthony J. Onwuegbuzie is Professor in the Department of Educational Leadership and Counseling at Sam Houston State University, Huntsville, TX.

Julie A. Corrigan is a PhD Candidate in the Department of Education at the University of Ottawa, Ontario, Canada.

Corresponding author:

Anthony J. Onwuegbuzie can be contacted at tonyonwuegbuzie@aol.com.

