School Psychologists' Use of Mixed Methods Research in the Field: A Call for More Mixed Methods Research and Mixed Methodological Articles

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To cite this article:
Leech, N. L., & Onwuegbuzie, A. J. (2023). School psychologists' use of mixed methods research in the field: A call for more mixed methods research and mixed methodological articles. *Journal of Mixed Method Studies*, 7, 42-77. [Online] www.jomesonline.com, https://doi.org/10.14689/jomes.2023.4.1

Article Info: *Received*: 21 June 2023 *Revised*: 14 August 2023 *Accepted*: 17 September 2023

Abstract
School psychologists utilize multiple types of data in their everyday work. Adopting a mixed methods way of thinking can assist school psychologists in incorporating multiple types of data into their decision making. The purpose of this mixed methods case study is to update our understanding of mixed methods research publication trends in the *Journal of School Psychology*, *Psychology in the Schools, School Psychology, and School Psychology Review* and to extend our understanding of patterns related to published mixed methods research studies in these journals. Representing the inclusion criterion, the authors searched for articles published in these school psychology journals wherein the author(s) explicitly declared their works as representing mixed methods research—referred to as *mixed methods-declared articles*. Only 35 mixed methods-declared articles were found in the four top school psychology journals over a 17-year period (i.e., 2006 to August 18, 2022)—representing approximately two articles per year, on average. This is not only surprising but disturbing, bearing in mind the efficacy and effectiveness of mixed methods research for investigating wicked problems.

Keywords: mixed methods, micro-research studies, meso-research, exo-research, macro-research, and chrono-research studies, mixed methods way of thinking, full(er) integration, 1 + 1 = 3 integration approach, 1 + 1 = 1 integration approach

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School Psychologists' Use of Mixed Methods Research in the Field: A Call for More Mixed Methods Research and Mixed Methodological Articles

School psychologists have many roles and responsibilities; arguably the primary one is to support students (McKevitt, 2012). Multiple techniques and skills are utilized to obtain data for school psychology decision making that can help the student (McKevitt, 2012). To make these decisions, multiple techniques and skills are utilized in order to obtain data for decision making (Neugebauer et al., 2021). In fact, according to Neugebauer et al. (2021), school psychologists routinely examine data—including data representing the cognitive and affective domains. These data that are examined by school psychologists include, but are not restricted to, interviews, published measures, discussions with colleagues, and so forth (Neugebauer et al., 2021); thus, it is evident that school psychologists are intrenched in data. What is not clear is how school psychologists integrate the multiple types of data. Data collected and used by school psychologists can be qualitative or quantitative in nature; for example, interviews or discussions with teachers yield words and, thus, represent qualitative data. Additionally, most published ratings scales and checklists assist school psychologists in collecting quantitative data. Therefore, school psychologists are in a prime situation to utilize a *mixed methods way of thinking*, which, as defined by Greene (2007), refers to a researcher lens that is based on a multiplistic research philosophy that involves the promotion of multiple ways of observing, meaning-making, and positionalities. For the school psychologist, adopting a mixed methods way of thinking can be invaluable. To expand better on this relationship, three main qualities of a mixed methods way of thinking are explored.

First, a mixed methods way of thinking can improve a school psychologist's use of data by providing an avenue into *pragmatic thinking*, which is defined by Onwuegbuzie and Leech (2005) as a way of thinking that advocates for integrating qualitative and quantitative methods and data in order to increase the rigor of both approaches. People who adopt pragmatic thinking represent some form of a pragmatist (Onwuegbuzie & Corrigan, 2021). It should be noted that there are many types of pragmatism, such as *pragmatism-of-the-middle philosophy* (Johnson & Onwuegbuzie, 2004), *pragmatism-of-the-right philosophy* (Putnam, 2002; Rescher, 2000), and *pragmatism-of-the-left philosophy* (Maxcy, 2003; Rorty, 1991). Also, more recent forms of pragmatism have emerged, namely, *dialectical pluralism*, which involves a belief in incorporating multiple epistemological perspectives within the same inquiry (i.e., Johnson, 2011, 2012, 2017; Johnson et al., 2014); and *critical dialectical pluralism* (Onwuegbuzie et al., 2023; Onwuegbuzie & Frels, 2013), wherein, according to this stance, the researcher assumes a research-facilitator role that empowers the participant(s) to assume the role of participant-researcher(s), who, in turn, either present/perform the findings themselves or co-/present/co-perform the findings with the research-facilitator(s). In any case, using pragmatic thinking as a school psychologist allows for incorporating all available data—both qualitative and quantitative data—to be included in decision making. For extensive discussion about pragmatism, we refer readers to Biesta (2010), Johnson et al. (2016), Onwuegbuzie et al. (2009), Onwuegbuzie and Wisdom (2014), and Tucker et al. (2020).

Second, adopting a mixed methods way of thinking can lead to the possibility of the *integration* of qualitative and quantitative data. Integration of qualitative and quantitative data involves an explicit interaction between the quantitative and qualitative elements of a mixed methods research study (Plano Clark, 2019). Integration happens on a continuum where there can be

very little integration or much integration between the qualitative and quantitative techniques, or somewhere in between (Tashakkori et al., 2021). Most recently, Onwuegbuzie and Hitchcock (2022) defined integration as "the optimal mixing, combining, blending, amalgamating, incorporating, joining, linking, merging, consolidating, or unifying of research approaches, methodologies, philosophies, methods, techniques, concepts, language, modes, disciplines, fields, and/or teams within a single study" (p. 598). By integrating qualitative and quantitative data in the same decision-making process, a mixed methods way of thinking is being employed. Thus, having access to high-quality mixed methods models can help bridge the gap between research and practice, and this type of mixed methods thinking is similar to what a school psychologist does when making eligibility determination decisions or when conducting a comprehensive assessment in which there is a need to integrate different sources of data, to examine convergence and divergence, and so forth.

Utilizing integration in practice as a school psychologist can be daunting. Examining the extant literature can assist school psychologists in understanding better the concept of integration. One example from the extant literature is Soncini et al. (2021), who utilized integration in their study of teachers' emotional well-being during the COVID-19 pandemic. The purpose of the study was to examine teachers' threat appraisals, to investigate the relationship between teachers' threat appraisals and their emotional exhaustion, and to explore processes that protect teachers from emotional exhaustion. With both qualitative and quantitative data collected via an online survey, these authors had the opportunity to present their results independently, with the qualitative results presented first, followed by the quantitative results. Instead, Soncini et al. (2021) integrated the data by utilizing data transformations (Collingridge, 2013), which occurs when qualitative data are transformed into numbers (Sandelowski, 2001; Sandelowski et al., 2009), or when quantitative data are transformed into words (Onwuegbuzie & Leech, 2019, 2021). As Soncini et al. (2021) state, they integrated qualitative and quantitative data via the use of quantitizing, thereby integrating the qualitative and quantitative data better to understand the phenomenon.

Third, adopting a mixed methods way of thinking involves acknowledging multiple stakeholders as well as their standpoints (Tashakkori et al., 2021). A primary responsibility for school psychologists is to utilize the viewpoints of teachers, counselors, parents, and other school personnel (McKevitt, 2012). These multiple stakeholders can have different information that is important to incorporate into the final decision (Harrison et al., 2004). Utilizing a mixed methods way of thinking can assist the school psychologist in including multiple stakeholders and their unique perspectives.

Recognizing multiple stakeholders perspectives typically is accomplished by school psychologists in their everyday practices (Splett et al., 2013). School psychologists contemplate the importance of students being able to function well in multiple situations with different stakeholders, for example, in classes with teachers, with other students, and with administration. School psychology researchers also tend to present the importance of research results with regard to stakeholders in the discussion sections of their reports. In mixed methods research studies, adopting a mixed methods way of thinking can increase the awareness of the importance of stakeholders. An example of adopting a mixed methods way of thinking to recognize multiple stakeholders is found in the study conducted by Lum et al. (2019). In their mixed methods research study, Lum et al. (2019) investigated students with chronic illness and

their educational practices, well-being, and engagement with school. In the discussion section of their article, Lum et al. (2019) outline multiple important stakeholders—including students, parents, teachers, and administration—who oversee school-based mental health programs. These three main qualities of a mixed methods way of thinking are visualized in Figure 1. For more discussion on the role of mixed methods in school psychology practice and in school psychology research, we refer you to Powell et al. (2008).

Figure 1
Three Main Qualities of Mixed Methods Thinking

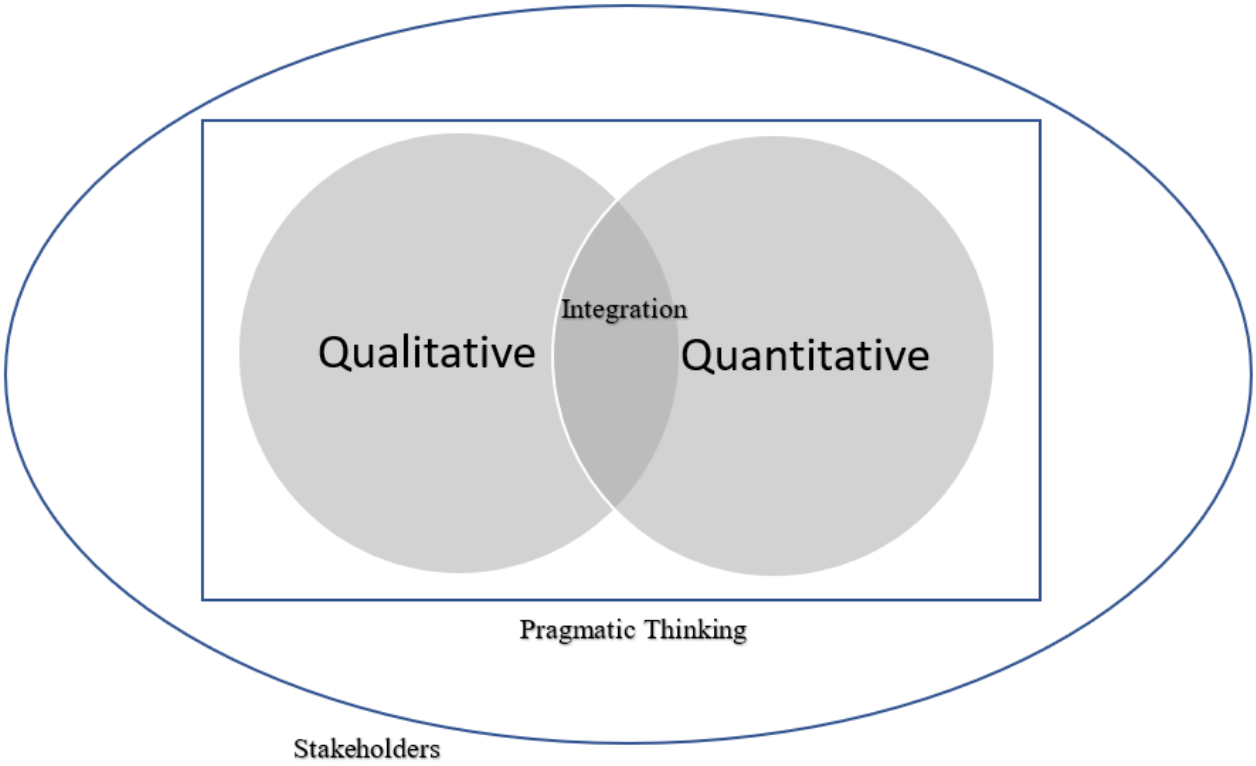


Table 1

Articles Identified as Mixed Methods Research Studies in the Title, Abstract, and/or Keywords Published in Four Top School Psychology Journals from 2006 – August 8, 2022: Data Presented by Year

	JSP			***PITS***			***SP***			***SPR***		
Year	**Total No. of Articles**	**No. MM Articles**	**% of MM Articles**	**Total No. of Articles**	**No, MM Articles**	**% of MM Articles**	**Total No. of Articles**	**No, MM Articles**	**% of MM Articles**	**Total No. of Articles**	**No, MM Articles**	**% of MM Articles**
2006	39	0	0	75	0	0	20	0	0	44	0	0
2007	39	0	0	73	0	0	5	0	0	42	0	0
2008	31	0	0	76	1	1.32	41	0	0	42	0	0
2009	19	0	0	99	0	0	23	0	0	44	1	2.27
2010	24	0	0	80	1	1.25	21	0	0	44	0	0
2011	37	0	0	85	0	0	24	0	0	36	2	5.56
2012	46	0	0	82	1	1.22	21	0	0	27	0	0
2013	48	0	0	104	0	0	27	0	0	29	0	0
2014	38	0	0	85	1	1.18	42	0	0	31	0	0
2015	32	0	0	78	0	0	42	0	0	30	0	0
2016	39	0	0	73	1	1.37	48	1	2.08	25	1	4.00
2017	45	0	0	95	2	2.11	37	0	0	26	0	0
2018	63	0	0	89	3	3.37	74	0	0	29	0	0
2019	63	0	0	100	1	1.00	12	0	0	31	0	0
2020	35	0	0	114	2	1.75	-	-	-	60	2	3.33
2021	50	1	2.00	156	8	5.13	-	-	-	87	1	1.15
2022	52	0	0	176	5	2.84	-	-	-	49	0	0
Total	700	1	0.14	1,640	26	1.59	437	1	0.23	676	7	1.04

JSP = Journal of School Psychology; *PITS = Psychology in the Schools*
SPR = School Psychology Review; *SP = School Psychology*

Previous Research on the Prevalence of Mixed Methods Research in School Psychology

Powell et al. (2008) conducted a mixed methods research study investigating the types of empirical research studies published in the following four leading school psychology journals between 2001 and 2005: *Journal of School Psychology*, *Psychology in the Schools*, *School Psychology*, and *School Psychology Review*. These journals published multiple types of articles including quantitative research studies, qualitative research studies, mixed methods research studies, literature reviews, meta-analyses, commentaries, responses, and book reviews. The prevalence rate of mixed methods research studies across all articles in these four school psychology journals during these years ranged from 5.21% (*Psychology in the Schools*) to

9.55% (*Journal of School Psychology*). Further, with respect to the 438 empirical research articles that were published across all four school psychology journals from 2001 to 2005, 13.7% (i.e., 60) represented mixed methods research studies.

Onwuegbuzie and Corrigan (2018) conducted what they coined as a *meta-prevalence rate study*, which they described as a study of the prevalence rate of prevalence rate studies. Their meta-prevalence rate investigation yielded 46 prevalence rate studies that had been conducted between 1994 and 2015, in which the researcher(s) had documented the prevalence of mixed methods research studies across various fields or disciplines, and of which 45 prevalence rate studies had taken place since 2003. These researchers reported an overall mean meta-prevalence rate of 11.65% (Median = 9.6%, *SD* = 9.92%). The median rate indicated that 51.2% of the prevalence rate studies yielded prevalence rates that were less than 10%, 78.0% of these studies yielded prevalence rates that were less than 15%, and 87.8% of these studies yielded prevalence rates that were less than 20%. Therefore, the prevalence rate of 13.7% documented by Powell et al. (2008) represents the 67th percentile. This percentile indicates that the prevalence rate of mixed methods research studies across these four school psychology journals is slightly higher than is the mean prevalence rate across the 46 prevalence rate studies that represented 46 unique disciplines.

As noted by Onwuegbuzie and Corrigan (2014), assuming that the three research traditions (i.e., qualitative research, quantitative research, and mixed methods research) had been used (approximately) equally by researchers, then, it is reasonable to expect the prevalence rate for mixed methods research to have been (approximately) 33%—as is the case for the discipline of mathematics education, as identified by Hart et al. (2009) and Ross and Onwuegbuzie (2010, 2012, 2014). As such, under this assumption, although the slightly-above-average 13.7% prevalence rate for mixed methods research articles for the four top school psychology journals from 2001 to 2005 may be considered to be an encouraging finding, this prevalence rate is below this expectation. Moreover, this 13.7% should be contrasted with the 42% prevalence rate for evaluation (Christie & Fleischer, 2010) and, as noted previously, the prevalence rate of approximately one third for all four prevalence rate studies representing the discipline of mathematics education (Hart et al., 2009; Ross & Onwuegbuzie, 2010, 2012, 2014).

Current Study

Powell et al.'s (2008) analysis of school psychology journals involved the time period from 2001 to 2005. This marked the period wherein, as declared by Teddlie and Tashakkori (2003), the mixed methods research field had just entered its *adolescence* whereby many unresolved issues within this field of research prevailed. In the nearly 17 years that have occurred since 2005, the field of mixed methods research has advanced significantly, leading Onwuegbuzie and Hitchcock (2019a) to declare that the field has entered *emerging adulthood*, which represents the span between adolescence and full-fledged adulthood (Arnett, 2000). Therefore, what is needed is an update of the landscape of school psychology journals in terms of the publication of mixed methods research articles. It is this update that we now provide. The following research questions were investigated:

1) What is the volume and growth trajectory of mixed methods-declared articles published in the four leading school psychology journals (i.e., *Journal of School*

Psychology, *Psychology in the Schools*, *School Psychology*, *School Psychology Review*) from 2006 to August 18, 2022?
2) To what extent were mixed methods research designs specified?
3) To what extent were the identified studies grounded in the mixed methods literature? What types of research designs were used and what emphasis was placed on quantitative and qualitative phases?
4) What are the characteristics of mixed methods-declared articles with respect to the number of authors, number of pages, and citations, and what are the associations between these variables?
5) What are the characteristics of the titles of the works?
6) What is the level of integration presented across the corpus of identified studies?
7) To what extent were best practices followed (i.e., whether or not the study was grounded within the mixed methods research literature, whether or not the author(s) explicitly specified the type of mixed methods research design, and level of integration) when conducting mixed methods and are there discernible relationships that help understand use of these practices?
8) Are there examples of integration approaches that are emblematic of 1 + 1 =1 integration (i.e., representing a fully integrated mixed methods study, which is defined later when we present related findings)?

Method

Mixed Methods Research Design

A mixed methods case study (MMCS; Sharp et al., 2012; Walton et al., 2020) was used to address these eight research questions. The quantitative phase involved a systematic review to determine the prevalence rate of mixed methods-declared studies across all articles published in the four aforementioned school psychology journals between 2006 and August 18, 2022 (quantitative and qualitative phases), as well as to examine the characteristics of mixed methods-declared studies (quantitative and qualitative phases). In this MMCS, the quantitative and qualitative phases occurred sequentially, with the qualitative phase—involving coding each of the extracted mixed methods-declared studies—following the quantitative phases, and the quantitative component being given more weight. Specifically, a two-level case study was utilized. The first level involved all the articles published in these four school psychology journals between 2006 and August 18, 2022. That is, these articles served as the first-level case. The second-level case, involving a subset of the articles contained in this first-level case, represented all the articles that addressed Research Question 8. The first level took the form of a multiple or collective case design, which is an instrumental case design that is extended to multiple cases (Stake 2005). According to Stake (2005), in instrumental case designs, a particular case is examined primarily to provide insights into an issue such that the case is of secondary interest. In contrast, the second-level case took the form of an intrinsic case design. As described by Stake (2005), in an intrinsic case design, the researcher(s) aim to obtain a better understanding of each particular (e.g., illustrative, deviant) element within the case. This design is not undertaken primarily because the case represents many other cases but rather because in all its individuality and ordinariness, this case itself is of primary interest.

Data Collection

PRISMA (i.e., Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Moher et al. 2009) and JARS (i.e., Journal Article Reporting Standards; American Psychological Association, 2020) were used in the execution of the search process. PRISMA was used to identify the full set of articles included in the Scopus database (i.e., indexed by Scopus) that were published between 2006 and August 18, 2022 (i.e., the date on which the search was conducted) in the following four leading school psychology journals: *School Psychology*, *School Psychology Review*, *Psychology in the Schools*, and *Journal of School Psychology*. Because JARS standards recommend that authors reference *mixed methods* in the title and abstract, the search strategy used in the current study conforms with existing reporting standards. Thus, an initial keyword search was conducted using the following string: (TITLE-ABS-KEY ("mixed methods") AND TITLE-ABS-KEY ("mixed-method*")) to search the article's title, abstract, and keywords. The goal in using these keywords was to identify articles published in these school psychology journals wherein the author(s) explicitly declared their works as representing mixed methods research—what we refer to as *mixed methods-declared articles*. That is, our inclusion criterion was that the author(s) must have explicitly declared their research study as representing mixed methods research. Searching with this method provided mixed methods research articles wherein the author(s) framed their work as being mixed methods in nature, as opposed to articles in which both quantitative research approaches *and* qualitative research approaches were used to any degree—thereby helping us not run the risk of over-identifying mixed methods research articles because of the classification of mixed methods research articles that the author(s) themselves would not have classified as representing mixed methods research. Our rationale for focusing on the mixed methods-declared prevalence rate was that, for these articles, the authors framed their work as being mixed methods in nature.

As they were during the 2001-2005 period, these four journals were still leading journals, as evidenced by their impact factors at the time the study took place: *School Psychology* (Impact Factor = 1.757; 5-Year Impact Factor =3.093), *School Psychology Review* (2020 Impact Factor = 2.722; 5-Year Impact Factor [2020] = 4.133), *Psychology in the Schools* (Impact Factor [2020] = 1.75), and *Journal of School Psychology* (Impact Factor [2020] = 4.292).

Coding and Analyses

Both authors participated in the coding of the articles to varying degrees. In order to assess inter-rater reliability (i.e., inter-coder agreement), both authors coded the first 20% of the articles. The inter-rater reliability for these articles was 100%. Therefore, the second author coded the remaining (i.e., 80%) articles. It should be noted that these authors had plenty of experience co-coding mixed methods articles in the past (see, for e.g., Leech et al., 2011). Each of the 35 Scopus-indexed mixed methods-declared research articles was coded via the following variables that were of interest within each of the eight research questions, as follows:

- The volume (i.e., ratio scale) and growth trajectory (i.e., ratio scale) of mixed methods-declared articles published in the four leading school psychology journals (i.e., *Journal of School Psychology*, *Psychology in the Schools*, *School Psychology*, *School Psychology Review*) from 2006 to August 18, 2022
- The extent to which each author(s) explicitly specified the type of mixed methods research design (0 = No; 1 = Yes)
- The extent to which each study was grounded within the mixed methods research literature (0 = no mixed methods citations; 1 = one mixed methods citation; 2 = several mixed methods citations in the methods section; 3 = several mixed methods citations throughout the article)
- Emphasis of mixed methods research design (i.e., qualitative dominant, quantitative dominant, or equal status)
- Characteristics of the titles of the works (open-ended)
- Level of collaboration in each article (i.e., number of authors; ratio scale)

- Number of pages of each article (i.e., ratio scale)
- Number of times each article had been cited (i.e., ratio scale)
- Apparent gender of the lead author of each work (i.e., 1 = Man; 2 = Woman)
- Characteristics of the titles of the articles (i.e., open-ended)
- The level of integration inherent in each mixed methods research design (1 = no integration of the quantitative and qualitative data until the interpretation stage; 2 = small to moderate integration of the quantitative and qualitative data; and 3 = full(er) integration of the quantitative and qualitative data)
- The extent to which best practices in mixed methods research were followed (i.e., whether or not the study was grounded within the mixed methods research literature, whether or not the author(s) explicitly specified the type of mixed methods research design, and level of integration)
- Predictors of whether each author(s) explicitly specified the type of mixed methods research design (i.e., whether or not the study was grounded within the mixed methods research literature, whether or not the author(s) explicitly specified the type of mixed methods research design, and level of integration)
- Examples of integration approaches that are emblematic of 1 + 1 =1 integration (i.e., full[er] integration)

In order to address the research questions, multiple analyses were conducted. For Research Questions 1-4 and 6-7, descriptive statistics (i.e., proportions/percentages) were used to determine the series of prevalence rates. Means and standard deviations also were assessed to determine the average scores and spread of the data. Chi square analyses were conducted to assess associations between dichotomous/nominal variables, including the prevalence rates between 2001-2005 and 2006-2022 (Research Question 1). To assess differences between groups, independent samples *t* tests were computed (i.e., Research Question 4); assumptions for the *t* test, including the dependent variable being normally distributed and independent data were met. Spearman's rho was conducted to investigate associations between continuous variables that were not normally distributed (i.e., Research Question 4). Odds ratios were computed to assess the likelihood of differences between two dichotomous variables, specifically between apparent gender and lead authorship status (i.e., Research Question 4).

In order to address Research Question 5, classical content analysis (Berelson, 1952) was conducted to assess the frequency of topics and words used in the titles of the articles (i.e., Research Question 5). First, the titles were read and chunked into smaller topic phrases. Second, each chunk was given a code. These codes were constantly compared to earlier used codes and if a code could be reused, it was utilized. The codes then were grouped by similarity.

A latent class analysis was conducted to determine the smallest number of clusters (i.e., latent classes) that explains the relationships among select systematic review variables under the hypothesis that the set of mixed methods-declared research studies could be classified into a small number of distinct clusters (i.e., latent classes) such that each study belonged to only one cluster.

An *All Possible Subsets* (APS) canonical discriminant analysis—a form of discriminant analysis that is recommended by many statisticians (e.g., Onwuegbuzie & Daniel, 2003; Thompson, 1995)—was used to identify predictors of whether the author(s) explicitly specified the type of mixed methods research. For the current analysis, the following three variables were treated as the predictor (i.e., independent) set of variables: *number of article pages* (ratio variable: ≥ 0), *whether or not the study was grounded within the mixed methods research literature* (i.e., dichotomous variable: no or little grounding vs. moderate or high levels of grounding), and *level of integration* (i.e., dichotomous variable: no or low levels of integration vs. moderate or high levels of integration). The dependent variable was whether the author(s) explicitly specified the type of mixed methods research (i.e., dichotomous variable:

specified vs. did not specify). In APS canonical discriminant analysis, for these three predictor variables, separate discriminant functions were computed for all predictor variables (i.e., $n = 3$) singly, all possible pairs (i.e., $n = 3$) of predictor variables, and the one trio of variables, until the best subset of predictor variables is identified according to some criteria. For this analysis, the criteria utilized were Wilks's lambda, the probability level, the canonical correlation, the standardized canonical discriminant function coefficients, and the structure coefficients. The assumption that the samples were independent of each other was met. Further, each article corresponded to only one group (e.g., each article was coded as representing either low levels integration or moderate/high levels of integration) such that group membership was mutually exclusive. With regard to the third and final assumption of multivariate normality, this was not an issue for three (i.e., 2 predictor variables and 1 dependent variable) out of the four variables because they represented dichotomous variables. According to Onwuegbuzie and Daniel (2002), variables for which either the standardized skewness coefficient (i.e., skewness coefficient divided by its standard error) or the standardized kurtosis coefficient (i.e., kurtosis coefficient divided by its standard error), or both, are outside the ±3 range suggest departure from normality. For number of pages, both the standardized skewness coefficient (i.e., 1.36) and the standardized kurtosis coefficient (i.e., 2.33) were within the range of normality, suggesting little evidence of any serious departure from normality. However, it should be noted that the assumption of multivariate normality is more restrictive than is the assumption of univariate normality assumed because it implies not only that each individual continuous variable has a normal distribution but also that the joint distribution of the variables is multivariate normal (Bray & Maxwell, 1985). Thus, although univariate normality is a necessary condition for multivariate normality, it is not a sufficient one. Nevertheless, because the other variables in the model were dichotomous, the assumption of multivariate normality was not a cause for concern.

Results and Discussion

Findings from the analyses of these articles are presented by research question.

Results for Research Question 1—What is the volume and growth trajectory of mixed methods-declared articles published in the four leading school psychology journals (i.e., *Journal of School Psychology*, *Psychology in the Schools*, *School Psychology*, *School Psychology Review*) from 2006 to August 18, 2022?

Volume of Mixed Methods-Declared Articles

As can be seen from the PRISMA flowchart (Figure 2), the initial search yielded 3,453 Scopus-indexed *mixed methods-declared articles*. Table 1 presents articles self-identified as mixed methods research studies in the title, abstract, and/or keywords published in the selected four top school psychology journals from 2006 to August 18, 2022. Table 2 represents mixed methods research designs published in the four school psychology journals from 2006 to August 18, 2022. From Figure 2 and Table 1, it can be seen that, of the 3,453 articles published across these four journals, only 39 articles were identified in which the phrase "mixed methods" or "mixed-methods" appeared in the title, abstract, and/or keywords. That 4 out of these initial 39 works did not qualify as a mixed methods-declared empirical article indicates that the *false positive rate* for identifying Scopus-indexed mixed methods-declared articles during this 17-year period across the four school psychology journals is 10.26%. Therefore, the number of mixed methods-declared articles ended up being 35.

Figure 2

PRISMA Flow Chart Detailing Steps in the Identification and Screening of Scopus-Indexed Mixed Methods Research Articles Published in Four Leading School Psychology Journals in which the Phrase "Mixed Methods" or "Mixed-Methods" Appeared in the Title, Abstract, and/or Keywords: 2006 – August 18, 2022

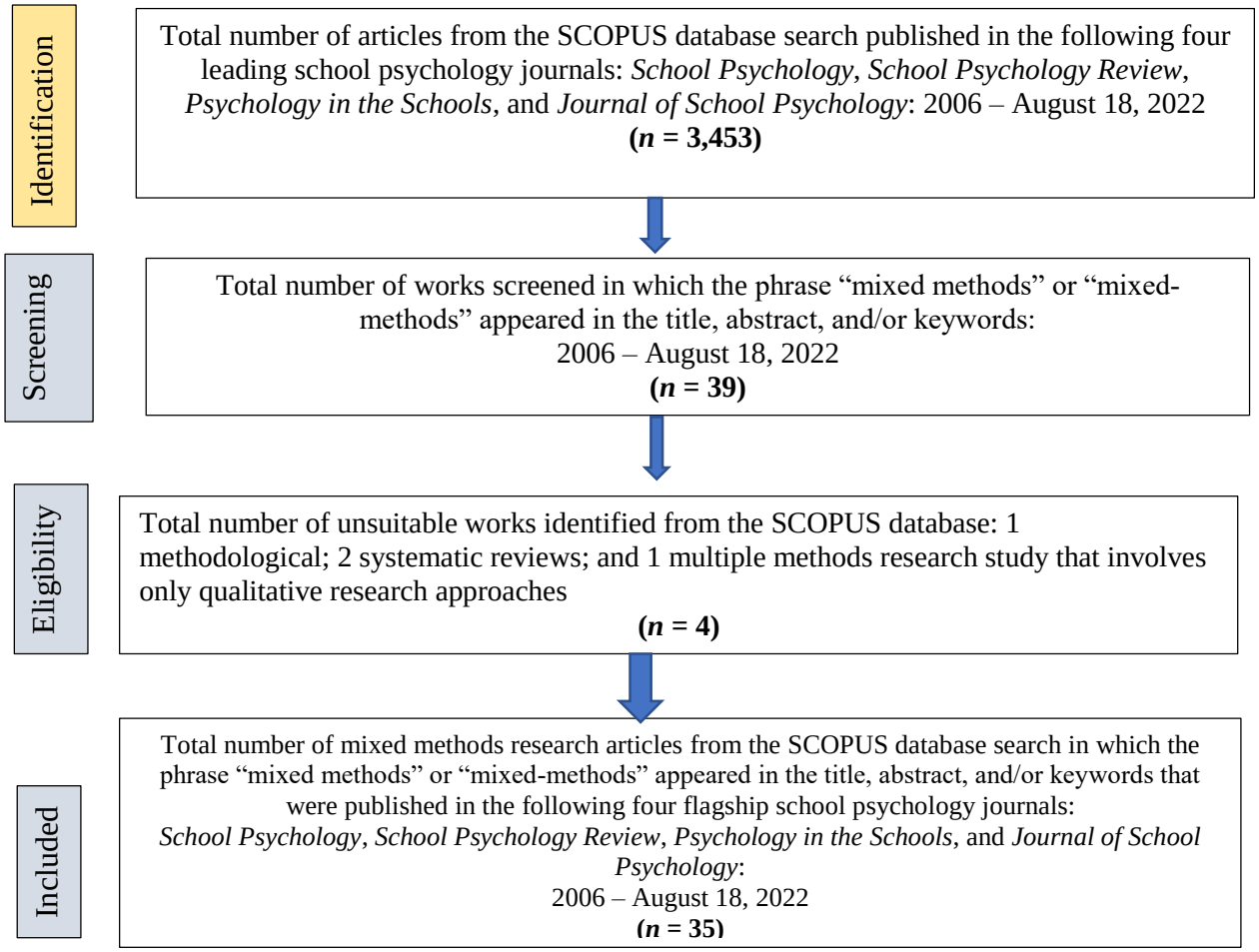


Table 2

Mixed Method Designs Published in Four School Psychology Journals from 2006 – 2022

Journal	PCE	PCD QUAL	PCD QUAN	PSE	PSD QUAL	PSD QUAN	FCE	FCD QUAL	FCD QUAN	FSE	FSD QUAL	FSD QUAN	TOTAL MIXED
JSP	0	0	0	0	0	1	0	0	0	0	0	0	1
PITS	11	5	2	2	1	2	2	0	0	1	0	0	26
SP[a]	1	0	0	0	0	0	0	0	0	0	0	0	1
SPR	2	0	0	1	0	4	0	0	0	0	0	0	7
Total	14	5	2	3	1	7	2	0	0	1	0	0	35

Note. JSP = *Journal of School Psychology*. PITS = *Psychology in the Schools*. SPR = *School Psychology Review*. SP = *School Psychology*.
P = partially-mixed; F = fully-mixed; C = concurrent; S = sequential; E = equal; D = dominant; QUAL = qualitative-dominant; QUAN = quantitative-dominant.
[a] The years examined were 2006 to 2019.

These 35 mixed methods-declared articles that were identified represent only 1.01% of all articles published. Powell et al. (2008) stated that in none of the 60 studies that they classified did the author(s) explicitly label their study as mixed methods research—what we, the present authors, refer to as a mixed methods-declared research study. As concluded by Powell et al. (2008), by not framing their studies as representing mixed methods research, these researchers unlikely maximized the extent that they utilized mixed methodologies.

The 17-year (2006 to 2022) mixed methods-declared prevalence rate of 1.01% for these four school psychology journals was statistically significantly ($\chi 2 = 228.59$, $p < .0001$) higher than that for the 2001-2005 period. This finding suggests that empirical articles published in these four journals since 2006 were 13.72 (95% confidence interval [CI] = 8.92, 21.10) more likely to represent a mixed methods-declared study than were the articles published between 2001 and 2005. However, it should be noted that this 1.01% percentage for the 2006-2022 school psychology publications is still extremely small.

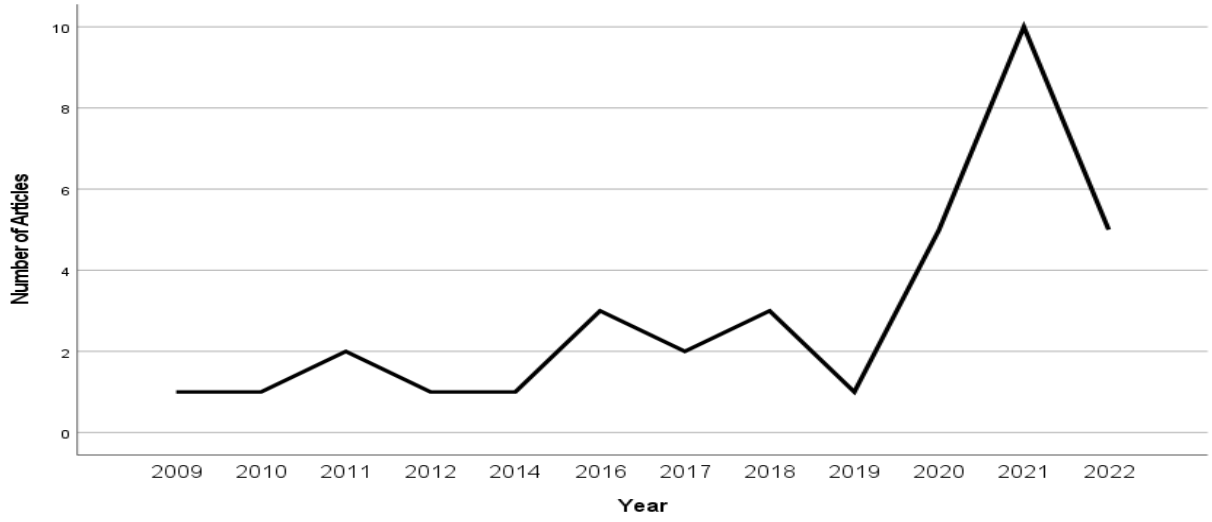
Table 1 also illustrates that, of the 35 mixed methods-declared articles, *Psychology in the Schools* is by far the most prevalent with 26 articles (74.29%), which represented 1.59% of all the articles published in this journal during the 17-year period—a small prevalence rate. This is followed by *School Psychology Review* ($n = 7$; 20.00%), representing 1.04% of all the articles published in this journal. That only one mixed methods-declared article had been published in both *School Psychology* and *Journal of School Psychology* during this 17-year period is a particular cause for concern.

Growth Trajectory

Figure 3 displays the growth trajectory of the Scopus-indexed mixed methods-declared school psychology articles by year (i.e., 2006 – August 18, 2022). It can be seen from this figure that more than one half (i.e., 57.14%) of these studies have been published since 2020. This finding indicates that the deliberate framing of mixed methods research studies in these four school psychology journals is a very recent phenomenon.

Figure 3

Growth Trajectory of the Literature by Documents Per Complete Year: 1960– August 18, 2022 (n = 35)



Results for Research Question 2—To what extent were mixed methods research designs specified? What types of research designs were used and what emphasis was placed on quantitative and qualitative phases?

Design Specification

A disturbing finding is that less than one half of the authors (42.9%) explicitly specified the type of mixed methods research design. That is, although these authors stated that their studies involved use of a mixed methods research approach, they did not provide the name of their mixed methods research design, nor did they (adequately) describe their design. Consequently, their research studies were not sufficiently transparent in terms of their overall mixed methods research approaches.

Types of Research Designs Used

Table 2 indicates that, of the 35 articles, 91.43% were partially mixed, wherein both the qualitative and quantitative components were conducted either concurrently (i.e., independently) or sequentially (dependently) before being mixed at the data interpretation stage (Leech & Onwuegbuzie, 2009). Further, 8.57% were fully mixed, indicating the researchers were using both qualitative and quantitative research approaches within or across one or more of the following four components within a single research study: (a) the research objective (e.g., the researcher[s] uses research objectives from both the qualitative [e.g., exploration] and quantitative research strands [i.e., prediction]; (b) type of data; (c) type of analysis; and (d) type of inference (Leech & Onwuegbuzie, 2009). More studies involved use of a concurrent design (65.71%) than a sequential design (34.29%). A concurrent design is the name given to situations when the qualitative and quantitative phases of the mixed methods research study occur at approximately the same point in time and are independent of each other, whereas a sequential design is when the quantitative and qualitative phases occur consecutively such that the latter phase is dependent, to some degree, on the previous phase (Leech & Onwuegbuzie, 2009).

Emphasis of Mixed Methods Research Design

Although more than one half of the sets of authors did not explicitly specify the type of mixed methods research design used, it was still possible to determine (i.e., code) the emphasis placed between the quantitative and qualitative phases/components of their studies. An analysis of these codes revealed that the slight majority (57.1%) of mixed methods research designs involved (approximately) equal quantitative and qualitative phases/components. Nearly one fifth of the studies (25.7%) were quantitative-dominant. The remaining 17.1% of the studies were qualitative-dominant. These findings indicate a slight proclivity towards a balanced mixed methods research approach in terms of quantitative and qualitative elements. Interestingly, it is similar to the findings of Onwuegbuzie et al. (2022), who documented a prevalence of equal-status mixed methods research designs of 61.54% among mixed methods research studies representing the field of education between 2017 and 2021, after conducting a systematic review of the ProQuest ERIC database.

Results for Research Question 3—To what extent were the identified studies grounded in the mixed methods literature?

An even more disturbing finding was that nearly one half (i.e., 48.6%) of the authors of mixed methods-declared research studies did not ground their research approach within the mixed methods research literature to *any* degree at all. In particular, the authors of these studies did not cite a single mixed methodological work. This prevalence rate is significantly larger than the 24.4% reported by Onwuegbuzie et al. (2022) for the field of education. In the present study, a further 28.6% of the studies involved grounding of their work to a minimum degree, typically representing the mixed methods research literature with only one citation and describing their mixed methods research approach using as little as one sentence. Another 8.6% of the studies represented the mixed methods research literature moderately. Finally, only 14.3% of the studies represented the mixed methods research literature in a significant manner.

Of the authors of mixed methodological works who were cited, John W. Creswell (28.6% of the total number of studies) was the most common, followed by Vicki L. Plano Clark (20.0%); Lawrence A. Palinkas (11.4%); R. Burke Johnson and Anthony J. Onwuegbuzie (both at 8.6%), then by Abbas Tashakkori, Charles Teddlie, and Tim Guetterman (each at 5.7%). The remaining mixed methodological authors were cited in one study (Nancy L. Leech, Michael D. Fetters, Bonnie K. Nastasi, John H. Hitchcock, David L. Morgan, Jennifer C. Greene, Valerie J. Caracelli, Sharlene N. Hesse-Biber, Joanne Protheroe, Matthew McLaughlin, Eradah O. Hamad, and Martina Yvonne Feilzer).

Results for Research Question 4—What are the characteristics of mixed methods declared articles with respect to the level of collaboration, number of pages, and citation frequency, and are there statistically significant differences between the current data and the data reported by Onwuegbuzie, Wilcox, et al. (2018)?

Level of Collaboration in Each Work

With respect to the level of collaboration, the number of authors ranged from 1 to 12. Representing the most popular combination, approximately one fourth (i.e., 25.7%) of the

studies involved 4 co-authors, followed, respectively, by 5 co-authors (i.e., 20.0%); 3 co-authors (i.e., 14.3%); 2 and 6 co-authors (8.6% each); 1, 7, and 8 co-authors (5.7% each), and 10 and 12 co-authors (2.9% each). Further, the overall level of collaboration (M = 4.69, SD = 2.35) is statistically significantly (t = 4.69, p < .0001) higher than is the overall level of collaboration (M = 2.71, SD = 1.72) reported by Onwuegbuzie, Wilcox, et al. (2018) across all articles (n = 146) published in the *Journal of Mixed Methods Research* (*JMMR*)—one of the two journals in existence (the other being the *International Journal of Multiple Research Approaches*)—from 2007 (its inception) to 2014. Interestingly, although the number of authors was not statistically significantly related to the year of publication (r_s = .21, p = .225) or the number of citations yielded by the manuscript (r_s = -.22, p = .216), a statistically significant and large positive relationship emerged between the number of authors and both the number of article pages (r_s = .49, p = .003) and impact factor (r_s = .46, p = .005). Specifically, the mixed methods-declared research studies with the most co-authors were more likely to produce longer articles that were published in the journals with the highest impact factor (i.e., *Journal of School Psychology*, *School Psychology Review*).

The 164 authors involved in these 35 mixed methods-declared research studies represented eight countries. The United States was the country most represented (n = 29; 82.86%), followed by Australia (n = 2; 5.71%). Authors from the remaining six countries (i.e., United Kingdom, Canada, China, Hong Kong, New Zealand, and China) each appeared in only one article. Interestingly, the 82.86% prevalence rate for U.S. authors is similar to the 85.14% prevalence rate for U.S. authors across all 3,453 articles published in the four school psychology journals. This information presents the dominance of U.S. authors in these four school psychology journals, and, to an even greater degree, the dominance of authors from English-speaking Western countries (i.e., United States, United Kingdom, Canada, Australia, New Zealand), which represented 91.43% of these works. In fact, only 3 of the 35 mixed methods-declared research studies were authored by researchers representing non-English-speaking Western countries. This dominance of authors from English-speaking Western countries is significantly larger than the 62.82% reported by Onwuegbuzie et al. (2022) for the field of education.

To understand better who the authors of these articles were, a search of the first authors' degree, year of graduation from a doctoral program, and alma mater was conducted. Of the 35 articles, 2 authors were first author on more than one article (1 author had 2 articles, and 1 author had 3 articles); thus, the total number of unique first authors was 32. Almost all (n = 30; 94%) of the first authors had obtained a Ph.D.; the two who had not were current students. The first authors had a range of graduation dates from 1993 to 2019, with a median of 2010 and modes of 2004 (n = 4) and 2006 (n = 4). Interestingly, most authors (n = 25) graduated after 2003, the year when the first edition of the *Handbook of Mixed Methods in Social and Behavioral Research* was published (Tashakkori & Teddlie, 2003).

Number of Pages of Each Article

The number of pages of the mixed methods-declared research articles ranged from 9 to 30 (M = 18.71, SD = 3.82). Although, as documented previously, a statistically significant relationship between the number of article pages and the number of authors was found, no relationship emerged between the number of pages and the year of publication (r_s = .13, p = .47), number of citations (r_s = .22, p = .21) or the impact factor (r_s = .27, p = .12).

Number of Times Each Work had been Cited

The number of times the mixed methods-declared research studies had been cited ranged from 0 to 485 (M = 45.34, SD = 96.22). Of these 35 articles, 7 had not received any citations. However, it should be noted that these uncited articles were published either in 2021 (n = 2) or in 2022 (n = 5), and, therefore, have not been in circulation for a sufficient time to be cited.

Apparent Gender of the Lead Author of Each Work

The apparent gender of the lead author was determined via a combination of photographs presented at their university's website, their self-written biographical statements, and, in some cases, their self-presented pronouns. An interesting finding is that women (80.0%) have been statistically significantly (p < .001) more likely than have men (20.0%) to be lead authors of mixed methods-declared articles. This proportion of women lead authors is statistically significantly (p = .014) larger than that of Wilcox et al. (2019), who reported that, for articles published in the *JMMR* from 2007 to 2014, women (57.7%) were statistically significantly (p = .0388) more likely than were men (42.3%) to be lead authors. In fact, women researchers were nearly 3 times (Odds ratio = 2.95; 95% CI = 1.21, 7.20) more likely to be lead authors of mixed methods-declared articles published in the four school psychology journals than in *JMMR*.

Results for Research Question 5—What are the characteristics of the titles of the works?

Our next analysis was to examine characteristics of the titles of these 35 mixed methods-declared research studies using classical content analysis. The goal of this analysis was to understand the essence of the titles of these articles. The results show that the topic of the study was most commonly used (n = 28). That is, for these 28 articles, the authors delineated the specific topic of study in their title. Representing the second most frequent code, "mixed methods" was used in 18 of the 35 articles. This code was followed by "teachers" (n = 15) wherein the type of teacher that was the focus of the investigation was specified in the title. The codes of "school" and "research design" were both used 10 times. The last five codes were used the least: "type of intervention" (n = 8), "type of program" (n = 6), "population" (n = 6), "survey" (n = 3), and "data type" (n = 1).

Results for Research Question 6—What is the level of integration presented across the corpus of identified studies?

The most significant finding involved the level of integration inherent in the mixed methods research designs. In particular, in slightly larger than one half (i.e., 54.3%) of the articles, there was no integration of the quantitative and qualitative data until the interpretation stage; in slightly larger than one third (i.e., 37.1%) of the articles, there was small to moderate integration of the quantitative and qualitative data; and, finally, in only the remaining 8.6% (n = 3) of the articles did full(er) integration of the quantitative and qualitative data take place. That is, for all but three studies, the level of integration occurred at the low(er) end of the integration continuum, being characterized by mixed methods research designs wherein integration only occurred at the interpretation stage of the research process in an attempt to generate meta-inferences. In general, meta-inferences involve combining or integrating

inferences stemming from both the qualitative and quantitative findings into a coherent whole (Tashakkori & Teddlie, 1998). This form of integration represents what Fetters and Freshwater (2015) referred to as the *1 + 1 = 3 integration formula*. More specifically, this formula is represented as follows:

> one or more qualitative phases/components (i.e., *1*) + one or more quantitative phases/components (i.e., *1*) + the synergy derived from integrating the qualitative phase(s)/component(s) and the quantitative phase(s)/component(s) (i.e., *1*) = *3*

In other words, according to Fetters and Freshwater's (2015) 1 + 1 = 3 integration formula, the integration of the qualitative and quantitative phase(s)/component(s) should produce findings and interpretations that are greater than the sum of the individual qualitative and quantitative phase(s)/component(s).

The 1 + 1 = 3 integration formula has logical appeal (Onwuegbuzie, 2022). However, it provides only *partial integration*. Indeed, as noted by Onwuegbuzie and Hitchcock (2019a, 2019b, 2022), the 1 + 1 = 3 integration formula reifies the dichotomy between quantitative research and qualitative research. As noted by Onwuegbuzie and Hitchcock (2019a), a potential drawback stemming from this 1 + 1 = 3 integration approach is that it reifies a qualitative–quantitative dichotomy[2], wherein there is a direct one-to-one connection between data and analyses such that qualitative analyses used *exclusively* to analyze qualitative data and quantitative analyses used *exclusively* to analyze quantitative data (cf. Onwuegbuzie & Combs, 2010). As such, with the 1 + 1 = 3 integration approach, the integration (mostly) occurs at the data interpretation stage, thereby potentially stunting innovation around integration.

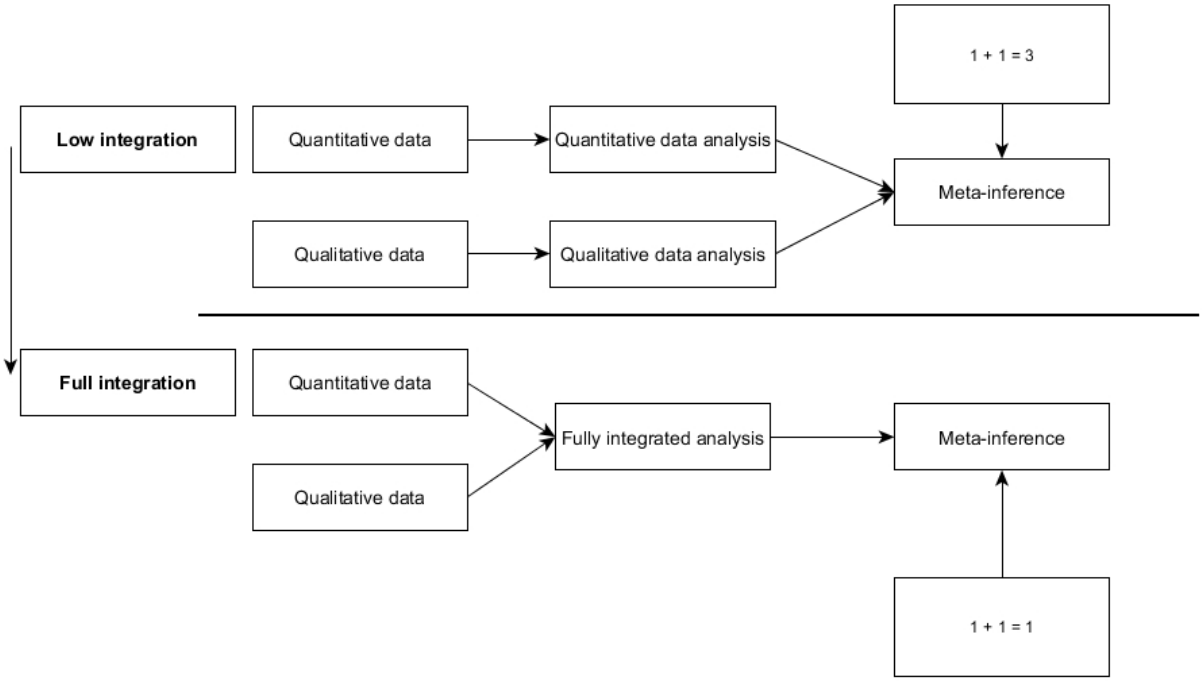
As advocated by Onwuegbuzie and Hitchcock (2022), regardless of the field or discipline, those conducting mixed methods research should strive for full(er) integration of the quantitative and qualitative elements, which, as noted previously, refers to "optimal mixing, combining, blending, amalgamating, incorporating, joining, linking, merging, consolidating, or unifying of research approaches, methodologies, philosophies, methods, techniques, concepts, language, modes, disciplines, fields, and/or teams within a single study" (Onwuegbuzie & Hitchcock, 2022, p. 598). And such full(er) integration can be obtained via what Onwuegbuzie (2017) originally referred to as the *1 + 1 = 1 integration approach*.

As explained by Onwuegbuzie and Hitchcock (2019a), the 1 + 1 = 1 integration approach serves as a complement to, but not a replacement of, the 1 + 1 = 3 integration approach. Rather, the goal of the 1 + 1 = 1 integration approach is to represent the *full[er]* integration of qualitative and quantitative elements at *all* stages of the mixed methods research process. This 1 + 1 = 1 integration approach leads to a replacement of the quantitative–qualitative dichotomy by continua that facilitate this full[er] integration (Onwuegbuzie & Hitchcock, 2019a). The 1 + 1 = 3 integration approach yields a mixed methods research study being conducted in a piecemeal manner that is characterized by one or more distinct quantitative phases and one or more distinct qualitative phases, thereby resulting in important synergy being omitted from each of phase of the research process—as exhibited by all but 3 of the 35 mixed methods-declared studies published in the four school psychology journals, which yielded partial integration. In contrast, optimally, the 1 + 1 = 1 integration approach enhances synergy at every stage of the mixed methods research process, yielding *full(er) integration*.

Figure 4 illustrates this difference in degree of integration between a 1 + 1 = 3 integration approach and a 1 + 1 = 1 integration approach. As can be seen in this figure, the 1 + 1 = 3 approach provides *partial integration*—as noted earlier—whereas the 1 + 1 = 1 approach represents *full(er) integration*. Therefore, the 1 + 1 = 1 integration approach is consistent with Creamer's (2018) stance wherein the qualitative and quantitative approaches are integrated dialectically at all stages of the research process. The 1 + 1 = 1 integration approach goes well beyond the integration of *data*. Indeed, optimally, full(er) integration can occur during the following five stages of the mixed methods research process:

- *Research Conceptualization Stage* (i.e., *research-producer stage*)
  - obtain information from an integrated research synthesis
  - determine the integrated goal of the study
  - determine the integrated objective(s)
  - determine the rationale for the study and the rationale for integration
  - determine the purpose of the research and the purpose of integration
  - determine the integrated research question(s)
- *Research Planning Stage* (i.e., *research-producer stage*)
  - select the integrated sampling design
  - select the integrated research design
- *Research Implementation Stage* (i.e., *research-producer stage*)
  - collect the integrated data
  - conduct an integrated analysis
  - legitimate/validate the integrated data and the data interpretations
  - interpret the integrated data via meta-inferences (i.e., inferences stemming from both the qualitative and quantitative findings being combined into a coherent whole; Tashakkori & Teddlie, 1998).
- *Research Dissemination Stage* (i.e., *research-producer stage*)
  - write the final integrated research report
  - re-conceptualize the integrated research question(s)
- *Research Utilization Stage* (i.e., *research-consumer stage*)
  - the consumer of the integrated research report uses the findings in an integrated manner for practical and/or research purposes.

Figure 4
Contrasting 1 + 1 = 3 Partial Integration and 1 + 1 = 1 Full Integration in Mixed Methods Research



Adapted from "Using fully integrated Bayesian thinking to address the 1 + 1 = 1 integration challenge," by A. J. Onwuegbuzie, J. H. Hitchcock, P. Natesan, and I. Newman 2018, *International Journal of Multiple Research Approaches*, *10*(1), p. 668. Copyright 2018 by Dialectical Publishing Inc.

Results for Research Question 7—To what extent are best practices in mixed methods research followed (i.e., whether or not the study was grounded within the mixed methods research literature, whether or not the author(s) explicitly specified the type of mixed methods research design, and level of integration) when conducting mixed methods and are there discernable relationships that help understand use of these practices?

Grounding in Mixed Method Literature

The latent class analysis revealed a two-cluster solution (L^2 = 10.91, df = 13, p = .62, Bootstrap p = .45). This solution involved the following three systematic review variables: whether or not the study was grounded within the mixed methods research literature, whether or not the author(s) explicitly specified the type of mixed methods research design, and level of integration. Cluster 1 (comprising 64.64% of the studies) was low with respect to whether or not the study was grounded within the mixed methods research literature, whether or not the author(s) explicitly specified the type of mixed methods research design, and level of integration. In contrast, Cluster 2 (comprising 35.36% of the studies) was high on these three variables. More specifically, this two-cluster solution illustrates that among this group of

authors of mixed methods-declared research studies, the authors belonging to Cluster 2 were more likely to implement the best practices of specifying the type of mixed methods research design, grounding their studies within the mixed methods research literature, and implementing a moderate to high level of integration.

Predictors of Whether the Author(s) Explicitly Specified the Type of Mixed Methods Research Design

The APS canonical discriminant analysis revealed a statistically significant canonical function ($\chi^2[3] = 17.59$, $p < .001$; Wilks's Lambda = 0.57). The corresponding canonical correlation was .65, which suggested a large effect size (Cohen, 1988). In addition, the group centroid (i.e., group mean of canonical variable) for this function was -0.73 for authors who did not explicitly specify the type of mixed methods research design and 0.97 for the author(s) who did explicitly specify the type of mixed methods research design. These statistics indicated that the discriminant function maximally separated these two types of authors.

An examination of the standardized canonical discriminant function coefficients revealed that, using a cutoff loading of 0.3 (Lambert & Durand, 1975), whether or not the study was grounded within the mixed methods research literature (0.83), level of integration (0.39), and number of article pages (0.30) were practically significant. Whether or not the study was grounded within the mixed methods research literature was, by far, the most significant predictor of whether or not the author(s) explicitly specified the type of mixed methods research design. Further, the structure coefficients indicated that two of the three predictor variables—level of integration (.45) and whether or not the study was grounded within the mixed methods research literature (.89)—significantly discriminated whether or not the author(s) explicitly specified the type of mixed methods research design, with the latter, again, being, by far, the most significant predictor.

A comparison of the standardized and structure coefficients implicated number of article pages as serving as a suppressor variable because although it had a significant standardized coefficient of .30 (i.e., ≥ .30), its corresponding structured coefficient was relatively small at .28 (i.e., < .30) (Onwuegbuzie & Daniel, 2003). The signs of the two variables with both significant standardized coefficients and structure coefficients indicate that author(s) who explicitly specified the type of mixed methods research design tended to produce articles that were grounded within the mixed methods research literature—which has intuitive appeal—as well as tended to represent studies that contained a higher level of integration of the quantitative and qualitative approaches.

Results for Research Question 8—Are there examples of integration approaches that are emblematic of 1 + 1 =1 integration?

Of the three mixed methods-declared studies identified from our systematic review as implementing full(er) integration (i.e., Brann et al., 2021; Denton et al., 2022; Merle et al., 2022), the best example of the 1 + 1 = 1 integration approach is the study conducted by Denton et al. (2022), although these researchers did not refer to their study as representing this genre. Specifically, these researchers examined how the perspectives of 601 parents change during their child's dyslexia assessment. The parents provided responses to both quantitative (i.e.,

Likert-format scale) and qualitative (i.e., open-ended) items contained in an online survey regarding their experiences throughout the dyslexia assessment and diagnosis process. The researchers analyzed the parents' responses via thematic coding, sentiment analysis, and regression analysis.

The researchers could have used the 1 + 1 = 3 approach wherein they implemented one or more separate and distinct quantitative phases (i.e., analyzing the responses to the Likert-format items) and one or more separate and distinct qualitative phases (i.e., analyzing the responses to the open-ended items). This would have yielded separate quantitative and qualitative sections in their article. Then, once all the quantitative data had been analyzed quantitatively, and all the qualitative data had been analyzed qualitatively, findings from the quantitative analyses and findings from the qualitative analyses then could have been combined into a coherent whole (i.e., obtaining meta-inferences) at the data interpretation stage of the study—which, optimally, would manifest itself in combined meaning making that occurred only in the Discussion section of the article. However, instead, and consistent with the 1 + 1 = 1 approach, the quantitative data analyses and qualitative data analyses interacted with each other during the analysis process, as did their quantitative data and qualitative data—as exemplified by their own Figure 1, which they entitled, "Synoptic table for mixed-methods data analysis" (p. 7). As three examples of this interaction among the data/analyses, the researchers stated the following:

> After the initial coding was completed, secondary coding was accomplished by cross-referencing respondents' short-answer responses to open-ended questions with survey responses to Likert-scale questions, multiple-selection questions, and other multiple-choice process questions. (p. 6)
> Through this selective coding process, relationships across data sets were determined that eventually evolved into themed concepts. (p. 7)
> To further validate and test the themes [emerging from the sentiment analysis, word co-occurrence analysis, and thematic analysis] within the current mixed-method study, we conducted another quantitative analysis. Descriptive and frequency analysis was conducted with all Likert-type scale questions, multiple-selection questions, and other multiple-choice process questions in the survey. Parents' short-answer responses to open-ended questions were cross-referenced with survey responses to Likert-scale questions, multiple-selection questions, and other multiple-choice process questions through content, conversational, and discourse analysis process. (p. 7)

Meta-Inferences

The purpose of this mixed methods case study was to update our understanding of mixed methods research publication trends in the *Journal of School Psychology, Psychology in the Schools, School Psychology, and School Psychology Review* and to extend our understanding of patterns related to published mixed methods research studies in these journals. Specifically, we identified articles published in these four school psychology journals over a 17-year period (i.e., 2006 to August 18, 2022) wherein the author(s) explicitly declared their works as representing mixed methods research—what we referred to as *mixed methods-declared articles*.

The systematic review (quantitative phase) revealed that only 35 mixed methods-declared articles were found in the four top school psychology journals over a 17-year period—representing approximately two articles per year, on average. This finding suggests a dominance of monomethod research studies. Another problematic finding is that more than one half of the authors (57.1%) neither specified the type of mixed methods research design nor described their design. An even more concerning finding was that nearly one half (i.e., 48.6%) of the authors did not ground their research approach within the mixed methods research literature to *any* degree at all. That is, they did not cite a single mixed methodological work. Therefore, we recommend that editors and reviewers of these school psychology journals require that authors of mixed methods research studies not only be much more transparent in terms of their overall mixed methods research approaches but also ground their research approach within the mixed methods research literature.

An encouraging finding is that these mixed methods-declared studies involved a relatively high degree of collaboration. Indeed, those with the most collaboration tended to have their articles published in the journals with the highest impact factor. However, the 82.86% prevalence rate for U.S. authors, which is similar to the 85.14% prevalence rate for U.S. authors across all 3,453 articles published in the four school psychology journals, reveals a dominance of authors from the United States in particular and from English-speaking Western countries in general. Therefore, we encourage editors of these four school psychology journals to consider taking steps to increase the diversity of authors who submit manuscripts to their journals.

An extremely noteworthy finding was that, in slightly more than one half (i.e., 54.3%) of the articles, there was no integration of the quantitative and qualitative data until the interpretation stage—representing the *1 + 1 = 3 integration formula* (Fetters & Freshwater, 2015). Indeed, only three of the mixed methods-declared studies involved full(er) integration of the quantitative and qualitative data, which Onwuegbuzie and Hitchcock (2022) referred to as the 1 + 1 = 1 integration approach. Whereas the 1 + 1 = 3 integration approach yields partial integration, the 1 + 1 = 1 integration approach yields full(er) integration. More specifically, the 1 + 1 = 3 integration approach results in important synergy being omitted from each of these phases. Indeed, the three mixed methods-declared studies that involved full(er) integration, identified via the qualitative phase of our study (i.e., Brann et al., 2021; Denton et al., 2022; Merle et al., 2022), demonstrated how synergy allows school psychology researchers to get much more out of their quantitative and qualitative data.

Limitations

There are limitations to this study. One limitation is the inclusion of only one database. It is possible that articles were missed due to not being incorporated into the database that was searched, which would yield a non-zero false negative rate. The major limitation associated with the systematic review stemmed from our decision, for practical purposes, not to examine all 3,453 articles closely to identify all mixed methods-declared empirical articles, but, instead, to focus on the title, abstract, and/or keywords. Indeed, our strategy could have resulted in a non-zero false negative rate. However, we hypothesize that this false negative rate is very low, if not zero, because, bearing in mind its relatively short formal history—with Collins et al. (2007) documenting that the first article in which the phrase “mixed methods” was used appeared in 1972 (Parkhurst et al., 1972)—it is difficult for us to imagine many school

psychology researchers conducting what they declared as mixed methods-declared research studies without using the phrase "mixed methods" or "mixed-methods" in the title, abstract, or at least as one of the keywords/phases. In any case, even if our systematic review led to a false negative rate—assuming that this rate was minimal—would not have affected our major conclusion from our review that the 17-year mixed methods-declared prevalence rate (i.e., 2006-August 18, 2022) for these four school psychology journals is extremely small. Finally, focusing on only four school psychology journals is a delimitation, not a limitation, because we planned to extend the Powell et al. (2008) work and there is merit in focusing on the top school psychology journals.

Conclusion

Despite the increased popularity of mixed methods research over the last 15 years (Onwuegbuzie & Corrigan, 2014), the discipline of school psychology continues to experience what Onwuegbuzie and Corrigan (2014) coined as a *mixed methods research gap*, inasmuch as the mixed methods-declared frequency is much lower than the 33% threshold. Moreover, the fact that only 35 mixed methods-declared articles have been published in these journals over a 17-year period—representing approximately two articles per year, on average—is not only surprising but disturbing, bearing in mind the efficacy and effectiveness of mixed methods research for conducting the micro-research studies, meso-research, exo-research, macro-research, and chrono-research studies (Onwuegbuzie et al., 2013) that are needed to address wicked problems—which refer to problems that involve multiple interacting systems, wherein there is uncertainty about their characteristics and solutions, and for which there is a time pressure for finding solutions (Mertens et al., 2016). As noted by Mertens et al. (2016), constructs that fall into the realms of wicked problems that need to be addressed include power inequities, social injustice, and violations of human rights—issues that have become more complicated and complex in a COVID-19 era, and likely will remain the case during the post-COVID-19 era. Indeed, comparing the mixed methods-declared prevalence rate for these four school psychology journals between the 2001-2005 period and the 2006-2022 period indicates a very marginal increase in the rate of articles that are framed by the authors of mixed methods research studies, thereby suggesting that, although the field of mixed methods research in general has entered young adulthood, the discipline of school psychology is lagging behind—although they are not the only discipline to do so.[2]

Methodological works are works that discuss one or more old and/or existing research methods, or present a new advance(s) to a research approach (i.e., represent the level of tradition or system; e.g., Onwuegbuzie et al., 2013), method (i.e., represent part of an approach or system; Leech & Onwuegbuzie, 2020), or technique (i.e., represent a single step or procedure in the research process; e.g., Onwuegbuzie & Corrigan, 2021). The methodological work may describe a research approach, research method, or research technique that is completely new, or may offer a (potentially) better version of an existing research approach, research method, or research technique. Methodological works can be *non-empirical methodological*, *empirical methodological*, or *methodological empirical*. Non-empirical methodological works are those that discuss one or more old and/or existing research methods, or present a new advance(s) to a research approach, method, or technique but without using empirical evidence. In contrast, empirical methodological and methodological empirical works both include empirical data, at least in part, either to provide or to bolster the need/rationale for the methodological

advancement or to demonstrate its efficacy or effectiveness. The major difference between empirical methodological and methodological empirical works is that empirical methodological works are methodological works that take the form of an essay that includes empirical evidence—such as the Powell et al. (2008) article—whereas methodological empirical works are empirical works that resemble empirical articles such as the present article—that is, typically, they include the following four sections: Introduction/Literature Review, Method, Results, and Discussion sections.

Surprisingly, only three mixed methodological articles were published across the four school psychology journals within the 2006 to 2022 period (see Figure 2). Yet, methodological articles are essential for motivating researchers to utilize mixed methods research approaches, methods, and techniques.[3] Indeed, it is possible, if not likely, that the lack of publishing of mixed methodological articles in these school psychology journals have given the impression to some, if not many, school psychology researchers that the editors of school psychology journals do not place great importance to the publishing of mixed methods research articles in their journals. Another aspect that likely gives the impression that mixed methods research articles are not valued by the editors of school psychology journals can be gleaned from the aims and scope of each journal presented on their websites. Although *School Psychology* mentions mixed methods with respect to the types of submissions that are encouraged (https://www.apa.org/pubs/journals/spq), the aims and scope/guide for authors statements for the other three school psychology journals do not mention "mixed methods research" to any degree. For example, the most relevant statement under the "Types of contributions" section of the *Journal of School Psychology* is as follows:

> The Journal of School Psychology editorial team is striving to publish the most methodologically and statistically sophisticated research in the pages of the journal in order to contribute to the science of school psychology. Full-length manuscripts presenting original quantitative and qualitative research are ideal to meet this goal. (*Journal of School Psychology*, 2022, ¶ 1)

Here, the editors mention *quantitative and qualitative research* but not *mixed methods research*.

With these last two points in mind, we call on school psychology researchers seriously to consider not only conducting mixed methods research studies whenever the research question(s) justifies it—but also conducting mixed methods research studies that represent full(er) integration. The four school psychology journals outlined in the current paper publish research that address wicked problems when it comes to student well-being, which is why the lack of mixed methods research use is disturbing. If a school psychology researcher(s) does not have the necessary experience to conduct a (fully integrated) mixed methods research study, he/she/they should consider collaborating with experienced mixed methods researchers. Even more importantly, we call on the editors of these four flagship school psychology journals to encourage explicitly, as part of their aims and *scope/guide for authors* statements, authors to submit manuscripts that represent not only empirical mixed methods research articles but also mixed methodological articles. Hopefully, by taking the lead, other editors of school psychology journals and beyond will follow suit.

Our calls here are in line with those made two decades ago by Kratochwill and Stoiber (2002), who promote the "interweaving of quantitative and qualitative research methodologies so that the most accurate and authentic picture of the knowledge bases and skills associated with change processes is available" (p. 600). Indubitably, mixed methods research needs more exposure and visibility within the school psychology community: it is not ideal that top school psychology journals are not routinely publishing these works. Therefore, it is our hope that our present appeal for more attention to mixed methods research makes a difference.

Notes

[1] As conceptualized by Onwuegbuzie (2012),

> the radical middle should not be a passive and comfortable middle space wherein the status quo among quantitative and qualitative epistemologies is maintained, but rather a new theoretical and methodological space in which a socially just and productive coexistence among all research traditions is actively promoted, and in which mixed research is consciously local, dynamic, interactive, situated, contingent, fluid, strategic, and generative. (p. 192)

[2] For example, the discipline of special education has low mixed methods(-declared) prevalence rate (see, for e.g., Conroy et al., 2022; Hitchcock & Houchins, 2018; Marsh et al., 2022; McDaniel & Mazzotti, 2022; Onwuegbuzie & Corrigan, 2014).

3 See, for example, the mixed methodological article by Johnson and Onwuegbuzie (2004), which, at the time of writing, has been cited in more than 24,000 works and Johnson et al. (2007), which has been cited in more than 13,000 works.

References

(* denotes a mixed methods-declared article identified from the review)

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*, 469-480. https://doi.org/10.1037/0003-066X.55.5.469

American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). Author.

*Ashworth, E., Humphrey, N., Lendrum, A., & Hennessey, A. (2019). Beyond "what works": A mixed-methods study of intervention effect modifiers in the Good Behavior Game. *Psychology in the Schools, 57*(2), 222-246. https://doi.org/10.1002/pits.22312

Berelson, B. (1952). *Content analysis in communicative research.* Free Press.

Biesta, G. (2010). Pragmatism and the philosophical foundations of mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (2nd ed., pp. 95-117). Sage.

*Brann, K. L., Naser, S. C., Splett, J. W., & DiOrio, C. A. (2021). A mixed-method analysis of the implementation process of universal screening in a tiered mental health system. *Psychology in the Schools, 58*(11), 2089-2113. https://doi.org/10.1002/pits.22579

Bray, J. H., & Maxwell, S. E. (1985). *Multivariate analysis of variance*. Sage.

*Bulotsky-Shearer, R. J., McDermott, P. A., Lopez, M., Gort, M., Bouza, J., Fernandez, V., & Bichay-Awadalla, K. (2021). Development and initial validation of the Spanish form of the adjustment scales for preschool intervention (ASPI). *Journal of School Psychology*, *84*, 124-142. https://doi.org/10.1016/j.jsp.2020.11.003

*Camacho, D. A., Hoover, S. A., & Rosete, H. S. (2021). Burnout in urban teachers: The predictive role of supports and situational responses. *Psychology in the Schools, 58*(9), 1816-1831. https://doi.org/10.1002/pits.22561

*Camacho, D. A., Vera, E., Scardamalia, K., & Phalen, P. L. (2018). What are urban teachers thinking and feeling? *Psychology in the Schools*, 55(9), 1133-1150. https://doi.org/10.1002/pits.22176

*Cappella, E., Jackson, D. R., Bilal, C., Hamre, B. K., & Soulé, C. (2011). Bridging mental health and education in urban elementary schools: Participatory research to inform intervention development. *School Psychology Review, 40*(4), 486-508, https://doi.org/10.1080/02796015.2011.12087526

*Cho, E., Strawhun, J., Owens, S. A., Tugendrajch, S. K., & Hawley, K. M. (2021). Randomized trial of Show Me FIRST: A brief school-based intervention for internalizing concerns. *School Psychology Review, 50*(1), 52-61. https://doi.org/10.1080/2372966X.2020.1836944

Christie, C. A., & Fleischer, D. N. (2010). Insight into evaluation practice: A content analysis of designs and methods used in evaluation studies published in North American evaluation-focused journals. *American Journal of Evaluation*, *31*, 326-346. https://doi.org/10.1177/1098214010369170

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum.

Collingridge, D. S. (2013). A primer on quantitized data analysis and permutation testing. *Journal of Mixed Methods Research, 7*(1), 81-97. https://doi.org/10.1177/1558689812454457

Collins, K. M. T., Onwuegbuzie, A. J., & Jiao, Q. G. (2007). A mixed methods investigation of mixed methods sampling designs in social and health science research. *Journal of Mixed Methods Research, 1*(3), 267-294. https://doi.org/10.1177/1558689807299526

Conroy, M. A., McLeod, B. D., & Sutherland, K. S. (2022). Applying mixed methods and integration approaches to early childhood intervention research. In J. H. Hitchcock & A. J. Onwuegbuzie (Eds.), *The Routledge handbook for advancing integration in mixed methods research* (pp. 391-404). Routledge.

*Cowan, R. G., Tedeschi, P. J., Corbin, M., & Cole, R. (2022). A mixed-methods analysis of averted mass violence in schools: Implications for professional school counselors. *Psychology in the Schools, 59*(4), 817-831. https://doi.org/10.1002/pits.22647

Creamer, E. G. (2018). *An introduction to fully integrated mixed methods research*. Sage.

*Crooks, C. V., Hoover, S., & Smith, A. C. G. (2020). Feasibility trial of the school-based STRONG intervention to promote resilience among newcomer youth. *Psychology in the Schools, 57*(12), 1815-1829. https://doi.org/10.1002/pits.22366

*Denton, K., Coneway, B., Simmons, M., Behl, M., & Shin, M. (2022). Parents' voices matter: A mixed-method study on the dyslexia diagnosis process. *Psychology in the Schools, 59*(11), 2267-2286. https://doi.org/10.1002/pits.22762

*Dolbin-MacNab, M. L., Jeanblanc, A. B., Musil, C. M., Infurna, F. J., & Smith, G. C. (2022). Supporting grandchildren's remote instruction during COVID-19: Experiences of custodial grandmothers. *Psychology in the Schools.* Advance online publication. https://doi.org/10.1002/pits.22714

Fetters M. D., & Freshwater, D. (2015). The 1 + 1 = 3 integration challenge. *Journal of Mixed Methods Research, 9*(2), 115-117. https://doi.org/10.1177/1558689815581222

*Graves, S. L., & Aston, C. (2018). A mixed-methods study of a social emotional curriculum for Black male success: A school-based pilot study of the Brothers of Ujima. *Psychology in the Schools, 55*(1), 76-84. https://doi.org/10.1002/pits.22088

Greene, J. C. (2007). *Mixed methods in social inquiry*. Jossey-Bass.

Harrison, P. L., Cummings, J. A., Dawson, M., Short, R. J., Gorin, S., & Palmoares, R. (2004). Responding to the needs of children, families, and schools: The 2002 Multisite Conference on the Future of School Psychology. *School Psychology Review, 33*, 12-33. https://doi.org/10.1521/scpq.18.4.358.27001

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. https://doi.org/10.1177/1558689808325771

Hitchcock, J. H., & Houchins, D. E. (Eds.). (2018). Promoting mixed methods research in special education inquiry [Special issue]. *Research in the Schools, 25*(2).

Johnson, R. B. (2011). Dialectical pluralism: A metaparadigm to help us hear and "combine" our valued differences. In S. J. Hesse-Biber (Chair), *Addressing the Credibility of Evidence in Mixed Methods Research: Questions, Issues and Research Strategies.* Plenary conducted at the meeting of Seventh International Congress of Qualitative Inquiry, University of Illinois at Urbana-Champaign.

Johnson, R. B. (2012). Dialectical pluralism and mixed research. *American Behavioral Scientist, 56*, 751-754. https://doi.org/10.1177/0002764212442494

Johnson, R. B. (2017). Dialectical pluralism: A meta-paradigm whose time has come. *Journal of Mixed Methods Research, 11*, 156-173. https://doi.org/10.1177/1558689815607692

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher, 33*(7), 14-26. https://doi.org/10.3102/0013189X033007014

Johnson, R. B., Onwuegbuzie, A. J., de Waal, C., Stefurak, T., & Hildebrand, D. (2016). Unpacking pragmatism for mixed methods research: The philosophies of Peirce, James, Dewey, and Rorty. In D. Wyse & N. Selwyn *BERA/SAGE Handbook of Educational Research* (pp. 259-279). Sage.

Johnson, R. B., Onwuegbuzie, A. J., Tucker, S., & Icenogle, M. L. (2014). Conducting mixed methods research: Using dialectical pluralism and social psychological strategies. In P. Leavy (Ed.), *Oxford handbook of qualitative research methods* (pp. 557-578). Oxford University Press.

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. https://doi.org/10.1177/1558689806298224

Journal of School Psychology. (2022). *Guide for authors*. https://www.elsevier.com/journals/journal-of-school-psychology/0022-4405/guide-for-authors

*Jung, J. Y., & Young, M. (2017). Occupational/career indecision for economically disadvantaged high school students of high intellectual ability: A mixed-methods cognitive process model. *Psychology in the Schools, 54*(7), 718-735. https://doi.org/10.1002/pits.22023

Kratochwill, T. R., & Stoiber, K. C. (2002). Evidence-based interventions in school psychology: Conceptual foundations of the Procedural and Coding Manual of Division 16 and the Society for the Study of School Psychology Task Force. *School Psychology Quarterly, 17*(4), 341-389. https://doi.org/10.1521/scpq.17.4.341.20872

Lambert, Z., & Durand, D. (1975). Some precautions in using canonical analysis.

Journal of Market Research, XII(4), 468-475. https://doi.org/10.2307/3151100

Leech, N. L., Collins, K. M. T., Jiao, Q. G. & Onwuegbuzie, A. J. (2011). Mixed research in gifted education: A mixed research investigation of trends in the literature. *Journal for the Education of the Gifted, 34*, 860-875. https://doi.org/10.1177/0162353211425095

Leech, N. L., & Onwuegbuzie, A. J. (2009). A typology of mixed methods research designs. *Quality & Quantity: International Journal of Methodology, 43*(2), 265-275. https://doi.org/10.1007/s11135-007-9105-3

Leech, N. L., & Onwuegbuzie, A. J. (2020). The importance of nonparametric statistics in mixed methods research studies: Implications for rigor and ethicality. *International Journal of Multiple Research Approaches, 12*(2), 135-154. https://doi.org/10.29034/ijmra.v12n2editorial2

*Leung, C., Leung, J., Leung, S., & Karnilowicz. W. (2018). Pilot evaluation of the Whole Inclusive School Empowerment (WISE) project in kindergartens in Hong Kong: A mixed method approach. *Psychology in the Schools, 56*(1), 42-55. https://doi.org/10.1002/pits.22204

Lum, A., Wakefield, C. E., Donnan, B., Burns, M. A., Fardell, J. E., Jaffe, A., Kasparian, N. A.,

Kennedy, S. E., Leach, S. T., Lemberg, D. A., & Marshall, G. M. (2019). Facilitating engagement with school in students with chronic illness through positive education: A mixed-methods comparison study. *School Psychology, 34*, 677-686. http://dx.doi.org/10.1037/spq0000315

Marsh, R. J., Houchins, D. E., & Christenson, C. S. (2022). Using an integrated approach when conducting juvenile justice special education mixed research. In J. H. Hitchcock & A. J. Onwuegbuzie (Eds.), *The Routledge handbook for advancing integration in mixed methods research* (pp. 405-430). Routledge.

*Marziliano, A., Applebaum, A., Siess, S., & Moyer, A. (2023). A mixed-methods evaluation of the experience of emerging young adult care partners. *Psychology in the Schools*, 60(1), 143-161. https://doi.org/10.1002/pits.22781

Maxcy, S. J. (2003). Pragmatic threads in mixed methods research in the social sciences: The search for multiple modes of inquiry and the end of the philosophy of formalism. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 51-89). Sage.

McDaniel, S. L., & Mazzotti, V. L. (2022). Using integration approaches to study school and community partnerships across transition services. In J. H. Hitchcock & A. J. Onwuegbuzie (Eds.), *The Routledge handbook for advancing integration in mixed methods research* (pp. 431-448). Routledge.

McKevitt, B. C. (2012). School psychologists' knowledge and use of evidence-based, social-

emotional learning interventions. *Contemporary School Psychology, 16*, 33-45.

*McMakin, D., Ballin, A., & Fullerton, D. (2022). Secondary trauma, burnout, and teacher self-

care during COVID19: A mixed-methods case study. *Psychology in the Schools*, Advance online publication. https://doi.org/10.1002/pits.22764

*Merle, J. L., Larson, M. F., Cook, C. R., Brewer, S. K., Hamlin, C., Duong, M., McGinnis, J. L., Thayer, A. J., Gaias, L. M., & Lyon, A. R. (2022). A mixed-method study examining solutions to common barriers to teachers' adoption of evidence-based classroom practices. *Psychology in the Schools, 59*, 1825-1843. https://doi.org/10.1002/pits.22732

Mertens, D. M., Bazeley, P., Bowleg, L., Fielding, N., Maxwell, J., Molina-Azorin, J. F., & Niglas, K. (2016). Expanding thinking through a kaleidoscopic look into the future: Implications of the mixed methods international research association's task force report

on the future of mixed methods. *Journal of Mixed Methods Research, 10*, 221-227. https://doi.org/10.1177/1558689816649719

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G., and PRISMA Group. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *Annals of Internal Medicine, 151*, 264-269. https://doi.org/10.7326/0003-4819-151-4-200908180-00135

*Nese, R. N. T., Santiago-Rosario, M. R., Malose, S., Hamilton, J., Nese, J. F. T., & Horner, R. (2021). Improving a universal intervention for reducing exclusionary discipline practices using student and teacher guidance. *Psychology in the Schools, 59*(10), 2042-2061. https://doi.org/10.1002/pits.22576

Neugebauer, S. R., Morrison, D., Karahalios, V., Harper, E., Jones, H, Lenihan, S., Oosterbaan, F., & Tindall, C. (2021). A collaborative model to support K-12 pre-service teachers' data-based decision making in schools: Integrating data discussions across stakeholders, spaces, and subjects, *Action in Teacher Education, 43*(1), 85-101. https://doi.org/10.1080/01626620.2020.1842821

Onwuegbuzie, A. J. (2012). Introduction: Putting the *mixed* back into quantitative and qualitative research in educational research and beyond: Moving towards the r*adical middle. International Journal of Multiple Research Approaches, 6*, 192-219. https://doi.org/10.5172/mra.2012.6.3.192

Onwuegbuzie, A. J. (2017, March). *Mixed methods is dead! Long live mixed methods!* Invited keynote address presented at the Mixed Methods International Research Association Caribbean Conference at Montego Bay, Jamaica.

Onwuegbuzie, A. J. (2022). The 1 + 1 = 1 and 1 + 1 = 3 Integration formulas in mixed methods research: A poem promoting peaceful and productive co-existence. *Journal of Mixed Method Studies, 8*, 17-22. [Online]. https://doi.org/10.14689/jomes.2022.7.X

Onwuegbuzie, A. J., Abrams, S. S., & Forzani, E. (2023). The many SIDES of critical dialectical pluralism: A meta-philosophy—comprising a research philosophy, educational philosophy, and life philosophy—for addressing social justice, inclusion, diversity, and equity, and social responsibility. *International Journal of Multiple Research Approaches.*

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. https://doi.org/10.5172/mra.2013.7.1.2

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). Sage.

Onwuegbuzie, A. J., & Corrigan, J. A. (2014). Improving the quality of mixed research reports in the field of human resource development and beyond: A call for rigor as an ethical practice. *Human Resource Development Quarterly, 25*, 273-299. https://doi.org/10.1002/hrdq.21197

Onwuegbuzie, A. J., & Corrigan, J. A. (2018). What is happening now? A meta-prevalence study of mixed methods applications in special education. *Research in the Schools, 25*(2), 1-22.

Onwuegbuzie, A. J., & Corrigan, J. A. (2021). Intra-study matching considerations when using mixed methods-based research approaches: A critical dialectical pluralistic approach. *International Journal of Multiple Research Approaches, 13*(2), 116-136. https://doi.org/10.29034/ijmra.v13n2editorial2

Onwuegbuzie, A. J., & Daniel, L. G. (2002). Uses and misuses of the correlation coefficient. *Research in the Schools, 9*(1), 73-90.

Onwuegbuzie, A. J., & Daniel, L. G. (2003, February 12). Typology of analytical and interpretational errors in quantitative and qualitative educational research. *Current Issues in Education* [On-line], *6*(2). https://cie.asu.edu/ojs/index.php/cieatasu/article/view/1609/651

Onwuegbuzie, A. J., & Frels, R. K. (2013). Introduction: Towards a new research philosophy for addressing social justice issues: Critical dialectical pluralism 1.0. *International Journal of Multiple Research Approaches, 7,* 9-26. https://doi.org/10.5172/mra.2013.7.1.9

Onwuegbuzie, A. J., & Hitchcock, J. H. (2019a). Toward a fully integrated approach to mixed methods research via the 1 + 1 = 1 integration approach: Mixed Research 2.0. *International Journal of Multiple Research Approaches, 11*(1), 7-28. https://doi.org/10.29034/ijmra.v11n1editorial1

Onwuegbuzie, A. J., & Hitchcock, J. H. (2019b). Using mathematical formulae as proof for integrating mixed methods research and multiple methods research approaches: A call for multi-mixed methods and meta-methods in a mixed research 2.0 era. *International Journal of Multiple Research Approaches, 11*(3), 213-234. https://doi.org/10.29034/ijmra.v11n3editorial2

Onwuegbuzie, A. J., & Hitchcock, J. H. (2022). Towards a comprehensive meta-framework for full integration in mixed methods research. In J. H. Hitchcock & A. J. Onwuegbuzie (Eds.), *The Routledge handbook for advancing integration in mixed methods research* (pp. 566-606). Routledge.

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 Methods, 3,* 114-139. https://doi.org/10.5172/mra.3.2.114

Onwuegbuzie, A. J., & Leech, N. L. (2005). On becoming a pragmatic researcher: The importance of combining quantitative and qualitative research methodologies. *International Journal of Social Research Methodology: Theory and Practice, 8*(5), 375-387. https://doi.org/10.1080/13645570500402447

Onwuegbuzie, A. J., & Leech, N. L. (2019). On qualitizing. *International Journal of Multiple Research Approaches, 11*, 98-131. https://doi.org/10.29034/ijmra.v11n2editorial2

Onwuegbuzie, A. J., & Leech, N. L. (2021). Qualitizing data. In A. J. Onwuegbuzie & R. B. Johnson (Eds.), *The Routledge reviewer's guide to mixed methods analysis* (pp. 141-150). Routledge.

Onwuegbuzie, A. J., Mallette, M. H., & Mallette, K. M. (2022). A 41-year history of mixed methods research in education: A mixed methods bibliometric study of published works from 1980 to 2021. *Journal of Mixed Method Studies, 6,* 7-56. https://doi.org/10.59455/jomes.2022.6.2

Onwuegbuzie, A. J., Wilcox, R., Gonzales, V., Hoisington, S., Lambert, J., Jordan, J., Aleisa, M.,

Benge, C. L., Wachsmann, M. S., & Valle, R. (2018). Collaboration patterns among mixed researchers: A multidisciplinary examination. *International Journal of Multiple Research Approaches, 10*(1), 437-457. https://doi.org/10.29034/ijmra.v10n1a30

Onwuegbuzie, A. J., & Wisdom, J. P. (2014). Quantitative versus qualitative methods and beyond. In D. C. Phillips (Ed.), *Encyclopedia of Educational Theory and Philosophy* (pp. 678-682). Sage. https://doi.org/10.41.35/9781483346229

*Patel, S. G., Clarke, A. V., Eltareb, F., Macciomei, E .E., & Wickham, R. E. (2016). Newcomer immigrant adolescents: A mixed-methods examination of family stressors and school outcomes. *School Psychology Quarterly, 31*(2), 163-180. http://dx.doi.org/10.1037/spq0000140

Parkhurst, P. E., Lovell, K. L., Sprafka, S. A., & Hodgins, M. (1972). *Evaluation of videodisc modules: A mixed methods approach*. (ERIC Document Reproduction Service No. ED348014)

Plano Clark, V. L. (2019). Meaningful integration within mixed methods studies: Identifying

why, what, when, and how. *Contemporary Educational Psychology, 57*, 106-111. https://doi.org/10.1016/j.cedpsych.2019.01.007

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. https://doi.org/10.1002/pits.20296

*Powers, K., Hagans, K., & Linn, M. (2017). A mixed-method efficacy and fidelity study of Check and Connect. *Psychology in the Schools, 54*(9), 1019-1033. https://doi.org/10.1002/pits.22038

Putnam, H. (2002). *The collapse of the fact/value dichotomy and other essays*. Harvard University Press.

Rescher, N. (2000). *Realistic pragmatism: An introduction to pragmatic philosophy*. State University of New York Press.

*Ritz, M., Noltemeyer, A., Davis, D., & Green, J. (2014). Behavior management in preschool classrooms: Insights revealed through systematic observation and interview. *Psychology in the Schools, 51*(2), 181-197. https://doi.org/10.1002/pits.21744

Rorty, R. (1991). *Objectivity, relativism, and truth: Philosophical papers (Vol. 1*). Cambridge University Press.

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. https://doi.org/10.5172/mra.2010.4.3.233

Ross, A., & Onwuegbuzie, A. J. (2012). Prevalence of mixed methods research in mathematics education. *The 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. https://doi.org/10.5172/mra.2014.8.1.63

*Rubenstein, L. D., Siegle, D., Reis, A. M., Mccoach, D. B., & Burton, M. G. (2012). A complex quest: The development and research of underachievement interventions for gifted students. *Psychology in the Schools,* 49(7), 678-694. https://doi.org/10.1002/pits.21620

Sandelowski, M. (2001). Real qualitative researchers don't count: The use of numbers in qualitative research. *Research in Nursing & Health, 24,* 230-240. https://doi.org/10.1002/nur.1025

Sandelowski, M., Voils, C. I., & Knafl, G. (2009). On quantitizing. *Journal of Mixed Methods Research, 3,* 208-222. https://doi.org/10.1177/1558689809334210

*Santiago, C. D., Bustos, Y., Sosa, S. S., Jolie, S. A., Toussaint, R. F., Gebhardt, S., Stern, D., & Budd, K. S. (2022). Examining the implementation of teacher–child interaction training-universal in public schools. *Psychology in the Schools, 59*(11), 2208-2228. https://doi.org/10.1002/pits.22753

Sharp, J. L., Mobley, C., Hammond, C., Withington, C., Drew, S., Stringfield, S., & Stipanovic, N. (2012). A mixed methods sampling methodology for a multisite case study. *Journal of Mixed Methods Research, 6*(1), 34-54. https://doi.org/10.1177/1558689811417133

*Shernoff, E. S., Frazier, S. L., Maríñez-Lora, A. M., Lakind, D., Atkins, M. S., Jakobsons, L., Hamre, B. K., Bhaumik, D. K., Parker-Katz, M., Neal, J. W., Smylie, M. A., & Patel, D. A. (2016). Expanding the role of school psychologists to support early career teachers: A mixed-method study. *School Psychology Review, 45*(2), 226-249. https://doi.org/10.17105/SPR45-2.226-249

*Shernoff, E. S., Lekwa, A. L., Reddy, L. A., & Davis, W. (2020). Teachers' use and beliefs about praise: A mixed-methods study. *School Psychology Review, 49*(3), 256-274. https://doi.org/10.1080/2372966X.2020.1732146

*Shernoff, E. S., Marínez-Lora, A. M., Frazier, S. L., Jakobsons, L. J., Atkins, M. S., & Bonner, D. (2011). Teachers supporting teachers in urban schools: What iterative research designs can teach us. *School Psychology Review, 40*(4), 465-485. https://doi.org/10.1080/02796015.2011.12087525

*Sibley, M. H., Morley, C., Rodriguez, L., Coxe, S. J., Evans, S. W., Morsink, S., & Torres, F. (2020). A peer-delivered intervention for high school students with impairing ADHD symptoms. *School Psychology Review, 49*(3), 275-290. https://doi.org/10.1080/2372966X.2020.1720803

*Sobeck, E. E., Douglas, S. N., Chopra, R., & Morano, S. (2021). Paraeducator supervision in pre-service teacher preparation programs: Results of a national survey. *Psychology in the Schools, 58*(4), 669-685. https://doi.org/10.1002/pits.22383

Soncini, A., Politi, E., & Matteucci, M. C. (2021). Teachers navigating distance learning during COVID-19 without feeling emotionally exhausted: The protective role of self-efficacy. *School Psychology, 36, 494*-503. https://doi.org/10.1037/spq0000469

*Sotardi, V. A. (2016). Understanding student stress and coping in elementary school: A mixed-method, longitudinal study. *Psychology in the Schools, 53*(7), 705-721. https://doi.org/10.1002/pits.21938

Splett, J. W., Fowler, J., Weist, M. D., McDaniel, H., & Dvorsky, M. (2013). The critical role of school psychology in the school mental health movement. *Psychology in the Schools, 50*(3), 245-258. https://doi.org/10.1002/pits.21677

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). Sage.

*Suldo, S. M., Friedrich, A. A., White, T., Farmer, J., Minch, D., & Michalowski. J. (2009). Teacher support and adolescents' subjective well-being: A mixed-methods investigation. *School Psychology Review, 38*(1), 67-85. https://doi.org/10.1080/02796015.2009.12087850

Tashakkori, A., Johnson, R. B., & Teddlie, C. (2021). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences* (2nd ed.). Sage.

Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches*. Applied Social Research Methods Series (Vol. 46). Sage.

Tashakkori, A., & Teddlie, C. (2003). *Handbook of mixed methods in social and behavioral research*. Sage.

Teddlie, C., & Tashakkori, A. (2003). Major issues and controversies in the use of mixed methods in the social and behavioral sciences. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 3-50). Sage.

Thompson, B. (1995). Stepwise regression and stepwise discriminant analysis need not apply here: A guidelines editorial. *Educational and Psychological Measurement, 55,* 525-534. https://doi.org/10.1177/0013164495055004001

*Thornberg, R. (2010). Schoolchildren's social representations on bullying causes. *Psychology in the Schools, 47*(4), 311-327. https://doi.org/10.1002/pits.20472

Tucker, S., Johnson, R. B., Onwuegbuzie, A. J., & Icenogle, M. L. (2020). Conducting mixed methods research: Using dialectical pluralism and social psychological strategies. In P. Leavy (Ed.), *Oxford handbook of qualitative research methods* (2nd ed., pp. 836-875). Oxford University Press.

*Vega, D., Tabbah, R., & Monserrate, M. (2018). Multicultural school psychology training: An examination of students' self-reported course outcomes. *Psychology in the Schools, 55*(5), 449-463. https://doi.org/10.1002/pits.22123

*Vera, E., Heineke, A., Daskalova, P., Schultes, A. K., Pantoja-Patiño, J., Duncan, B., Yanuaria, C., & Furtado, C. (2021). Emergent bilingual high school students' social and emotional experiences. *Psychology in the Schools, 58*(10), 1932-1961. https://doi.org/10.1002/pits.22559

Walton, J. B., Plano Clark, V. L., Foote, L. A., & Johnson, C. C. (2020). Navigating intersecting roads in a mixed methods case study: A dissertation journey. *Journal of Mixed Methods Research*, *14*(4), 436-455. https://doi.org/10.1177/1558689819872422

*Wang, Q., & Lu, Y. (2020). Coaching college students in the development of positive learning dispositions: A randomized control trial embedded mixed-methods study. *Psychology in the Schools, 57*(9), 1417-1438. https://doi.org/10.1002/pits.22421

*Wiggs, N. B., Reddy, L. A., Bronstein, B., Glover, T. A., Dudek, C. M., & Alperin, A. (2021). A mixed-method study of paraprofessional roles, professional development, and needs for training in elementary schools. *Psychology in the Schools*, *58*, 2238-2254. https://doi.org/10.1002/pits.22589

Wilcox, R., Onwuegbuzie, A. J., Benge, C. L., Jordan, J., Wachsmann, M. S., Hoisington, S., & Gonzales, V. (2019). Authorship, collaboration, and gender: A multidisciplinary examination of trends among mixed researchers. *Research in the Schools*, *26*(2), xxvii-xxxvii.