SYSTEMATIC REVIEW OF EMPIRICAL STUDIES OF EARLY CHILDHOOD INTERVENTION PRACTITIONERS' COLLECTION AND USE OF DATA FOR DATA-BASED DECISIONS

LITERATURE REVIEW

ABSTRACT

Background: Young children, especially those with disabilities and delays, benefit from individualized learning objectives and plans. In order to individualize and tailor instruction, data on children's abilities and current behaviors must be collected and used to make data-based decisions. While numerous studies have shown researchers or other professionals can enter early childhood intervention settings and collect and use data, less is known about the extent to which practitioners can collect and use data to make data-based decisions. The purpose of this systematic review was to examine the empirical evidence on the collection and use of data for data-based decision making done by practitioners in early childhood intervention settings.

Method: We searched the Academic Search Premier, Cumulative Index to Nursing and Allied Health (CINAHL), Education Resources Information Center (ERIC), Medline, and APA PsycINFO electronic databases for relevant studies in November 2023. We included studies meeting the following inclusion criteria: (1) use of an experimental or pre-experimental comparative research design; (2) involvement of at least one child with a disability under the age of five years old; (3) involved the collection by a practitioner of ongoing child data for the purpose of making data-based treatment decisions; and (4) publication in a peer-reviewed journal in English. We extracted data on study characteristics, participant characteristics, intervention characteristics, and the findings and results of the individual studies. We conducted a descriptive narrative synthesis across studies.

Results: We included six studies in which practitioners collected and used regularly collected child data to make database decisions to inform interventions. There were 234 practitioners who worked with 400 children across the six included studies. Eighty-nine children (22%) had an identified disability or delay. The settings of the studies included homes, inclusive early care and educational settings, and segregated preschool classrooms. Four studies involved the collection of daily direct observational data on children's learning objectives and two studies involved regular periodic collection of curriculum-based measures. Two studies compared children's rate of progress when structured data-based decisions were mad. In these two studies, children made better progress when their home visitor used the structured data-based decision making process based on the data that they collected.

Conclusion: The results of this systematic review demonstrate empirical evidence that practitioners involved in early childhood intervention can collect and use ongoing data to make informed treatment decisions for young children with disabilities. Examination of the results of these studies show that a) practitioners can collect regular data in authentic early childhood intervention settings, and b) practitioners can collect and use data to help ensure children make adequate progress that children can master new skills and meet treatment goals. All studies included in this review included authentic early childhood intervention personnel working with children in applied or authentic settings, demonstrating the feasibility and utility of these practices. Based on our findings, we suggest an increase in the collection and use of data by practitioners is needed to help ensure that all children are provided the supports necessary to make optimal progress.

Young children, especially those with disabilities and delays, benefit from individualized learning objectives and plans. In order to individualize and tailor instruction, data on children's abilities and current behaviors must be collected and used to make data-based decisions. There is a substantial research base on data-based decision making, including the use of curriculum based measures, for children with disabilities in elementary and secondary schools (e.g., Bruhn et al., 2020; Espin et al., 2021; Gesel et al., 2021; Newton et al., 2012; Todd et al., 2014). These studies have shown that data, including curriculum-based measures, can be used by practitioners in schools to make informed intervention decisions leading to optimal student outcomes. Although conducted in more structured primary and secondary school settings, the practices associated with the data collection and data-based decision making process can serve as a guide for practitioners working in early childhood settings.

In early childhood intervention (i.e., early intervention birth-to-three [Part C] and early childhood special education [Part B/619]), a similar wealth of empirical information on the use of data-based decision making in authentic settings (e.g., homes, inclusive early care and education centers, preschool special education classrooms) does not exist. Moreover, what is known about the collection and use of data for data-based decision making in early childhood intervention has not been focused on authentic personnel. Studies have shown researchers or other highly trained professionals can engage in data collection practices in early childhood intervention settings (e.g., Gerow et al., 2023; Hampton et al., 2020; Spencer et al., 2015) but less is known about the extent to which everyday practitioners can collect and use data to make data-based decisions for the students with whom they work. While it is encouraging that studies have shown that regular ongoing data can be collected and used for data-based

decisions in authentic settings, most young children with disabilities do not receive their instruction from researchers or outside professionals. The majority of young children with disabilities receive most of their direct services from personnel in early care and education settings or home visitors. Because these instructional programs are overseen by practitioners, it is necessary for them to have the knowledge and skills to collect and use data to make informed treatment decisions (i.e., data-based decisions).

Practitioner-oriented articles and guides for how to collect and use data in early childhood intervention settings have been created (e.g., Gisclar et al., 2009; Hojnoski et al, 2009a; 2009b; Johnson & Monn, 2015; McCollow & Hoffman, 2020). While these guides are very helpful, the articles were not intended to be and are not empirical studies showing the effects of the data-based making procedures that are described. Because the use of data-based decisions for early childhood intervention is likely to lead to better child outcomes, it is essential to uncover what is known about the use of this practice by authentic service providers (e.g., teachers, therapists, home visitors) in everyday settings. Given the quick developmental progression children make during the early childhood period, it is imperative that young children with or at risk of developmental disabilities or delays have service providers who can collect and use data to make data-informed decisions. The purpose of this systematic review was to examine the empirical evidence on practitioners' collection and use of data for data-based decision making in early childhood intervention settings.

Method

This systematic review was conducted using contemporary guidelines for systematic reviews (e.g., Campbell et al., 2020; Cummings et al., 2023; Gough et al., 2017). Given the

heterogeneity of study designs and intervention methods, we chose to conduct a systematic review with a narrative synthesis of included studies. The review is reported consistent with the guidelines set forth in the Preferred Reporting Items for Systematic Reviews and Meta-analyses 2020 statement (PRISMA; Page et al., 2021).

Study Selection

Search strategy. We searched the Academic Search Premier, Cumulative Index to Nursing and Allied Health (CINAHL), Education Resources Information Center (ERIC), Medline, and APA PsycINFO electronic databases with no filters for language or publication status using search terms related to data-based decision making process, early childhood intervention, and young children with disabilities for relevant studies through November 2023 (see Appendix 1 for the specific search strategy utilized for each electronic database). Additionally, we used "snowballing methods" (Greenhalgh & Peacock, 2005) to identify additional studies by examining the reference lists of included studies, searching for articles citing included studies, and by examining studies included in a current review of progress monitoring studies in early childhood intervention (Shepley et al., 2024).

Inclusion criteria. We included articles published in English in peer-reviewed journals meeting the following inclusion criteria. First, studies must have used an experimental or pre-experimental research design, including randomized controlled trials, multi-group comparison trials (without randomization), and single case experimental designs. Pre/post group design studies and A-B single case design studies were excluded from the current review. Second, the study must have involved at least one child with a disability under the age of five years old. Third, the study must have involved the collection of ongoing child data for the purpose of

making data-based treatment decisions by a practitioner (e.g., home visitor, teacher, student teacher, therapist). To meet this inclusion criteria, data must have been collected on individual children at multiple time points (at least three) during the study. Studies in which caregivers were trained to collect ongoing data and studies in which research assistants or other study personnel collected the ongoing child data were excluded from the current review.

  Selection process. Two researchers initially screened all titles and abstracts from the electronic database search to exclude clearly irrelevant articles. They then independently screened the full text of potentially relevant articles against the inclusion criteria described above to confirm which studies meet all inclusion criteria; disagreements were resolved through discussion. After identifying the studies meeting the inclusion criteria in the electronic database search, we conducted the snowball search using an identical screening and full-text confirmation process.

Data extraction

  We extracted study level data on study characteristics (e.g., research design, sample size), sample characteristics (e.g., age, gender, race/ethnicity, experience), intervention characteristics and delivery methods (e.g., data collection methods, data collection schedule, data usage), and study results and effects. For the extraction of study results and effects, we first examined, where applicable, the effects of interventions on practitioners' collection of ongoing child data. We also extracted child-level outcome data to draw conclusions about the effects of ongoing data collection and the use of data-based decisions on child learning outcomes. For the data extraction, two researchers independently extracted data with discrepancies resolved through consensus.

Study synthesis

We conducted descriptive and narrative syntheses of the results and findings of the included studies. The intervention effect for each study was first assessed by examining the estimated magnitude of effects shown by the effect sizes calculated in each study (for group design studies; Buzhardt et al., 2011; 2020) and by calculating a success estimate (Reichow & Volkmar, 2010) for single case experimental design studies. We then created tables to explore patterns of effect to formulate conclusions about the effects of practitioner collection of ongoing child data when used to make data-based decisions to inform treatment options, progress, or conclusions.

Results

Study selection

Figure 1 shows a PRISMA flow diagram of study selection. As shown in Figure 1, we located 3,191 records in our electronic database search, with 2,403 records remaining after deduplication. After title and abstract screening 166 records remained, which had full text screening. Two studies located in the electronic database search met all inclusion criteria (Buzhardt et al., 2020; Shepley et al., 2022). We then conducted the first part of the snowball search using these two articles and located 82 records, with 10 articles being further evaluated through full-text screening. We located one additional study (Buzhardt et al., 2011) during the first part of the snowball search process. Finally, we conducted the second component of our snowball search by examining the 39 references from Shepley et al. (2024) review. We located three additional studies (Farmer et al., 1988; Love et al., 2019; Pellecchia et al., 2011) meeting all inclusion criteria in this stage of our search process.

Characteristics of Included Studies

Study characteristics. Six studies met all inclusion criteria were located across the electronic database search and use of snowball search methods. There was a mixture of group experimental research designs and single case experimental designs used across the six included studies. Two studies (Buzhardt et al., 2011; 2020) utilized a randomized controlled trial design (Buzhardt et al. 2020 used a cluster randomized controlled trial design) and four studies utilized a multiple baseline across participants single case experimental design (Farmer et al., 1988; Love et al., 2019; Pellecchia et al., 2011; Shepley et al., 2022). Key research or study characteristics are shown in Table 1.

Participant characteristics. There were 234 practitioners included across the six studies; 211 (90%) participants were in the two group design studies and 23 (10%) participants were included in the four singe case experimental design studies. Table 2 displays characteristics of the practitioner participants across studies. Most of the participants were female (232 of 234; 99%) – only 2 studies (Buzhardt et al., 2020; Shepley et al., 2022) reported the inclusion of a male practitioner with one male participant in each of the studies. Four studies (n = 182 participants) reported data on participants race or ethnicity, with 143 (79%) participants identifying as white/Caucasian, 15 (8%) participants identifying as Hispanic, 5 (3%) participants identifying as Black, 3 (2%) identifying as Asian, and 16 (9%) identifying as a different racial or ethnic identity. The ages of the practitioners were reported in three studies, with mean ages of 22.0 years (Love et al., 2019), 29.5 years (Farmer et al., 1988), and 30.8 years (Shepley et al, 2022). The participants in the Love et al. study were all advanced undergraduate students and 50% of the participants in the Shepley et al. study were graduate students. As shown in Table 2,

there was a mixture of educational attainment across studies and a range of average experience of zero to 12 years across the four studies reporting this characteristic.

The 234 practitioners included across studies worked with 400 young children. Children's mean age was reported in four studies, ranging from 1.4 years (Buzhardt et al., 2011) to 4.0 years (Love et al., 2019; Shepley et al., 2022). Gender was reported for 381 children across four studies; 222 children were male (58%) and 159 children were female (42%). Children's race or ethnicity was reported for 43 children in two studies (Pellecchia et al., 2011; Shepley et al., 2022). Across these two studies, 16 of 43 (37%) children were identified as white and 14 of 43 (33%) children were identified as black. Four children (4 of 43, 9%) were identified in each of the categories of Hispanic, Asian, and muti-racial and one child's race or ethnicity was described as "other." Each study including at least one child under the age of five years with an identified disability or delay; across studies 89 of 400 children (22%) had an identified disability or delay. The lowest number of children with disabilities included in the sample was 2 (of 3) children in the Love et al. (2019) study and the lowest percentage of included children with disabilities was 5% (10 of 214 child participants in the Buzhardt et al. 2020 study). The range of the percentage of children with disabilities in the remaining studies was 17% (2 of 12; Shepley et al., 2022) to 100% (Farmer et al., 1988; Pellecchia et al., 2011).

Practice characteristics. Characteristics of the data collection and use of data for data-based decisions are shown in Table 3. In examining Table 3, we noted that the two RCTs (Buzhardt et al., 2011; 2020) involved progress monitoring data that were collected at multiple time points and the four single case experimental design studies involved behavioral observations of instructional objectives.

Study findings and results. A description of study measures, research questions, and findings are shown in Table 4. As shown in Table 4, the two studies conducted using group experimental designs (Buzhardt et al., 2011; 2020) compared the effects of children's communication skills when practitioners used an online data-based decision-making aide (Making Online Decisions) to children's communication skills when practitioners did not have access to the data-based decision making tool. In both studies, Early Head Start home visitors collected regular periodic data on children's communication skills using the Early Communication Index from the *Individual Growth and Development Indicators* (Carta et al., 2010; Greenwood et al., 2011). Both studies showed children whose home visitors made data-based decisions with the online aide had superior outcomes to children whose home visitors were in the comparison group, with medium to large effect sizes that increased over observation periods.

The four studies (Farmer et al., 1988; Love et al., 2019; Pellecchia et al., 2011; Shepley et al., 2022) examined the effects of professional development or other training on practitioners' collection of data in authentic educational settings. As shown in Table 4, each participant across the four studies increased their collection of child instruction data after receiving the professional development or training package. The study by Love et al. included an evaluation of the quality of data collection, with the results showing data quality improved after the intervention as well, with one participant noting the improvement in data collection led to changes in the quality of learning targets for the student with whom she was working. These findings support the collection of ongoing individual child learning objectives by practitioners in early childhood intervention settings.

9

Discussion

We located six studies in this systematic review of data-based decision making in early childhood intervention. We sought to evaluate whether practitioners could both collect and use child data to inform treatment decisions for the children with whom they were working. The results of these studies document empirical evidence that practitioners involved in early childhood intervention can collect and use ongoing data to make informed treatment decisions for young children with disabilities. The procedures and results of the studies show that practitioners in authentic early childhood intervention settings can collect and use child data to make data-based decisions. Moreover, the practitioners included across studies collected data and made the intervention decisions independently (or independently through a computer interface). Thus, practitioners can and should collect ongoing child data to make better informed decisions for children's individual learning goals and objectives.

All six studies in this review included at least one child with an identified disability, with most studies having included a majority children with disabilities as target participants. Examination of the results of the included studies show that children make substantial progress on developmental and learning outcomes when they receive interventions that are individually tailored and adjusted using ongoing data (i.e., when data-based decisions are made). For most studies, the results were within participant comparisons, thus the superiority of data-based decisions is not easily made. Two studies included in this review (Buzhardt et al., 2011; 2020) did make direct comparisons of child outcomes when practitioners (i.e., Early Head Start home visitors) used data to make data-based decisions to adjust interventions to a condition in which a supported data-based decision making process was not used. The results of these two studies

showed superior outcomes with large effects when the online treatment decision tool was used by the Early Head Start home visitors. The results from these two studies are the strongest evidence from this review of the impact that the use of practitioner collected data and data-based decisions can improve outcomes for young children receiving early intervention and early childhood special education services.

When completing the study selection process, we noted several articles that had some, but not all data collection and usage practice elements necessary for a study to be included in this review. The largest set of studies that were excluded because the data was collected by researchers or outside professionals (i.e., not authentic early childhood intervention personnel) and not practitioners in everyday early childhood intervention settings (e.g., Gerow et al., 2023; Hampton et al., 2020; Spencer et al., 2015). We also excluded studies in which caregivers were taught to collect data on their child's learning (e.g., Frea & Hepburn, 1999; Hwang et al., 2013; Yuan et al., 2018). While these studies are promising in that they show caregivers may be available to assist with the data-based decision making process, this review was specifically focused on practitioners' participation in this practice. A final subset of studies was excluded because while practitioners may have been involved in some data collection activities but were not consistent with the conceptualization of ongoing data collection for treatment decisions that was used as our inclusion criteria (e.g., Craig et al., 2023; English & Anderson, 2006; Palmer et al., 2018). We acknowledge that single case designs frequently involve using the data and data patterns to make study decisions but felt this type of data-based decision making differed from the types of data-based decision making studies included in this review.

Limitations

Although we followed contemporary guidance for conducting a systematic review, the review is not without limitations. Primarily, we had a very focused research question related to the collection or use of on-going (regular) data collection to inform intervention decisions in which the data were collected directly by authentic early childhood intervention personnel. The specificity of our question led many studies that may have been similar to our included studies with a key difference (e.g., data collection by researchers or research assistants) being excluded. We kept the scope of this review narrow to more directly inform practice by reviewing the evidence most applicable to the characteristics and demands of everyday early childhood intervention practice but acknowledge that some conclusions from other research may generalize to this setting and population. A second limitation relates to the sensitivity of search, more specifically, the terms that were used in our search strategy. Because ongoing collection of child data by practitioners in authentic settings is not often a primary aim of research, designing a search strategy that allowed us to capture studies in which this practice was an element was difficult. To maintain a search that was manageable, we had to limit the number of terms included in our strategy, which may have caused the search strategy results to miss potentially relevant studies. To counter this, we used supplemental study retrieval methods (i.e., Snowball methods described above), which should help the overall sensitivity of the selection process. However, we cannot rule out the possibility that studies that would have met our inclusion criteria were not located in our search. Fourth, we searched for and located studies in which practitioners collected ongoing data to make data-based decisions regardless of the intended study purpose. For many of the studies, the collection and use of data by practitioners was not the central research question but an ancillary one. Studies that more directly examining how

practitioners can collect and use ongoing child assessment data may have provided more clear evidence for the effects of practitioners' use of data and data-based decision making in early childhood intervention settings. The decision to use ancillary artifacts or results for the primary research question in this review also eliminated our ability to assess the internal validity or risks of bias of the included studies. Finally, we examined studies in which individual practitioners were involved in the collection and use of data in early childhood intervention settings, most often with individual children or single classrooms. Applications of data-based decision making in early childhood intervention at a school, district, or systems levels were not reviewed and thus generalizations from this review cannot be made to these levels.

Conclusions

The results of this systematic review demonstrate empirical evidence that practitioners involved in early childhood intervention can collect and use ongoing data to make informed treatment decisions for young children with disabilities. Examination of the results of these studies show that a) practitioners are able to collect regular data in authentic early childhood intervention settings, and b) practitioners (i.e., teachers, therapists, home visitors) collect and use data to help ensure children make adequate progress that children can master new skills and meet treatment goals. All studies included in this review included authentic early childhood intervention personnel collecting and using the data to make informed decisions in applied or authentic settings, demonstrating its feasibility and utility. Based on our findings, we suggest an increase in this practice is needed to help ensure that all children are provided the supports necessary to make optimal progress.

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Table 1. Study Characteristics

Study	Research Design	Sample Size	Setting
Buzhardt 2011	Randomized controlled trial	Practitioners: n = 48 Children: n = 124	Home
Buzhardt 2020	Cluster randomized controlled trial	Practitioners: n = 163 Children: n = 214	Home
Farmer 1988	Multiple baseline across participants single case design	Practitioners: n = 4 Children: n = 16	Four inclusive preschool classrooms
Love 2019	Multiple baseline across participants single case design	Practitioners: n = 3 Children: n = 3	One public early childhood special education classroom Two head start classrooms
Pellecchia 2011	Multiple baseline across participants single case design	Practitioners: n = 12 Children: n = 31	Four segregated early childhood classrooms
Shepley 2022	Multiple baseline across participants single case design	Practitioners: n = 4 Children: n = 12	Two inclusive preschool classrooms

Table 2. Practitioner Characteristics

Study	N	Practitioners: Role and number	Gender (F:M)	Race / Ethnicity	Age (in years) Mean (range)	Education	Experience (in years) Mean (range)
Buzhardt 2011	48	EHS home visitor (*n* = 48)	48:0	not reported	not reported	HS (*n* = 20) AD (*n* = 16) BD (*n* = 11) GD (*n* = 1)	not reported
Buzhardt 2020	163	EHS home visitor (*n* = 163)	162:1	White (*n* = 134) Hispanic (*n* = 13) Other (*n* = 16)	not reported	HS (*n* = 2) SC or BD (*n* = 133) GD (*n* = 28)	not reported
Farmer 1988	4	Teacher (*n* = 4)	4:0	not reported	Mean = 29.5 (22 to 50)	HS (*n* = 2) BD (*n* = 2)	Mean = 4.8 (0.3 to 15)
Love 2019	3	Student teacher (*n* = 3)	3:0	White (*n* = 2) Asian (*n* = 1)	Mean = 22.0 (21 to 24)	US (*n* = 3)	No formal experience (all participants currently enrolled in pre-service program)
Pellecchia 2011	12	Lead teacher (*n* = 4) Teaching assistant (*n* = 8)	12:0	White (*n* = 4) Black (*n* = 5) Hispanic (*n* = 2) Asian (*n* = 1)	not reported	HS or AD (*n* = 8) BD or GD (*n* = 4)	Teachers: Mean = 8 (4 to 10) Assistants: Mean = 12 (4 to 20)
Shepley 2022	4	Teacher (*n* = 2) Student teacher (*n* = 2)	3:1	White (*n* = 3) Asian (*n* = 1)	Mean = 30.8 (26 to 40)	BD (*n* = 2) GD (*n* = 2)	Mean = 8.3 (4 to 17)

Notes: F = female; M = male; EHS = early head start; HS = high school degree; AD = associate's degree; BD = bachelor's degree; GD = graduate degree; SC = some college; US = undergraduate student

Table 3. Child participant characteristics

| Study	N	Children with Disabilities	Gender (F:M)	Age (in years) (SD or range)	Race / Ethnicity
Buzhardt 2011	124	*n* = 28 (23%)	53:71	Mean = 1.4 (SD=0.8)	not reported
Buzhardt 2020	214	*n* = 10 (5%)	90:124	Mean = 1.7 (SD=0.6)	not reported
Farmer 1988	16	*n* = 16 (100%)	not reported	(0.0 to 5.0)[1]	not reported
Love 2019	3	*n* = 2 (67%)	not reported	Mean = 4.0 (SD = 0.0)	not reported
Pellecchia 2011	31	*n* = 31 (100%)	8:23	Mean = 4.3 to 5.5[2]	White (*n* = 11) Black (*n* = 14) Hispanic (*n* = 3) Asian (*n* = 2) Other (*n* = 1)
Shepley 2022	12	*n* = 2 (17%)	8:4	Mean = 4.0 (3.25 to 4.75)	White (*n* = 5) Hispanic (*n* = 1) Asian (*n* = 2) Multi-ethnic (*n* = 4)

Note: [1] = range of classroom age ranges; [2] = Range of mean class ages;
F = female; M = male; SD = standard deviation

Table 4. Study Findings on Data Collection and Data-based Decision Making

Study	Child Data	Data Collector	Frequency	Research Question	Finding
Buzhardt 2011	Communication (IGDI-ECI)	Home visitor	Monthly	What was the impact of MOD support for home visitors on the growth in children's language compared children whose home visitors did not have MOD support?	Children with home visitors in the MOD condition had better ECI scores at the 3-month ($d = 0.24$), 6-month ($d = 0.47$) and 9-month ($d = 0.71$) assessment periods.
Buzhardt 2020	Communication (IGDI-ECI, PLS-5)	Home visitor	Quarterly	Were there differential effects when home visitors used the IGDI-ECI scores with the MOD online tool compared to home visitors who did not use the online tool?	Children with home visitors in the MOD condition had a higher total langue score on the PLS-5 at the 6-month ($d = 0.30$) and 12-month ($d = 0.60$) assessment periods.
Farmer 1988	Direct observation of instructional objectives	Teacher	Daily	Does training on data collection increase the frequency of practitioners' collection of child instructional data?	4:4 teachers increased the frequency of data collection after training in how to collect child instructional data.
Love 2019	Direct observation of instructional objectives	Teachers	Daily	Does training on data collection improve the quality data collected on children's instructional objectives?	3:3 preservice teachers improved the quality of observational data collected on children's learning objectives after training on data collection procedures.
Pellecchia 2011	Direct observation of instructional objectives	Teacher; teaching assistant	Daily	Does performance feedback increase the frequency of practitioners' collection of child instructional data?	3:4 classroom teams increased the percentage of data collected daily after the introduction of daily performance feedback.
Shepley 2022	Direct observation of instructional objectives	Teacher; student teacher	Daily	Does training on data collection procedures increase practitioners' collection of child instructional data	4:4 teachers and student teachers collected daily observational data on children's instructional objectives after training.

Note: IGDI-ECI = Individual Growth and Development Indicator – Early Communication Index; MOD = Making Online Decisions; PLS-5 = Preschool Language Scale (5th edition)

Figure 1. Flow Diagram of Study Selection
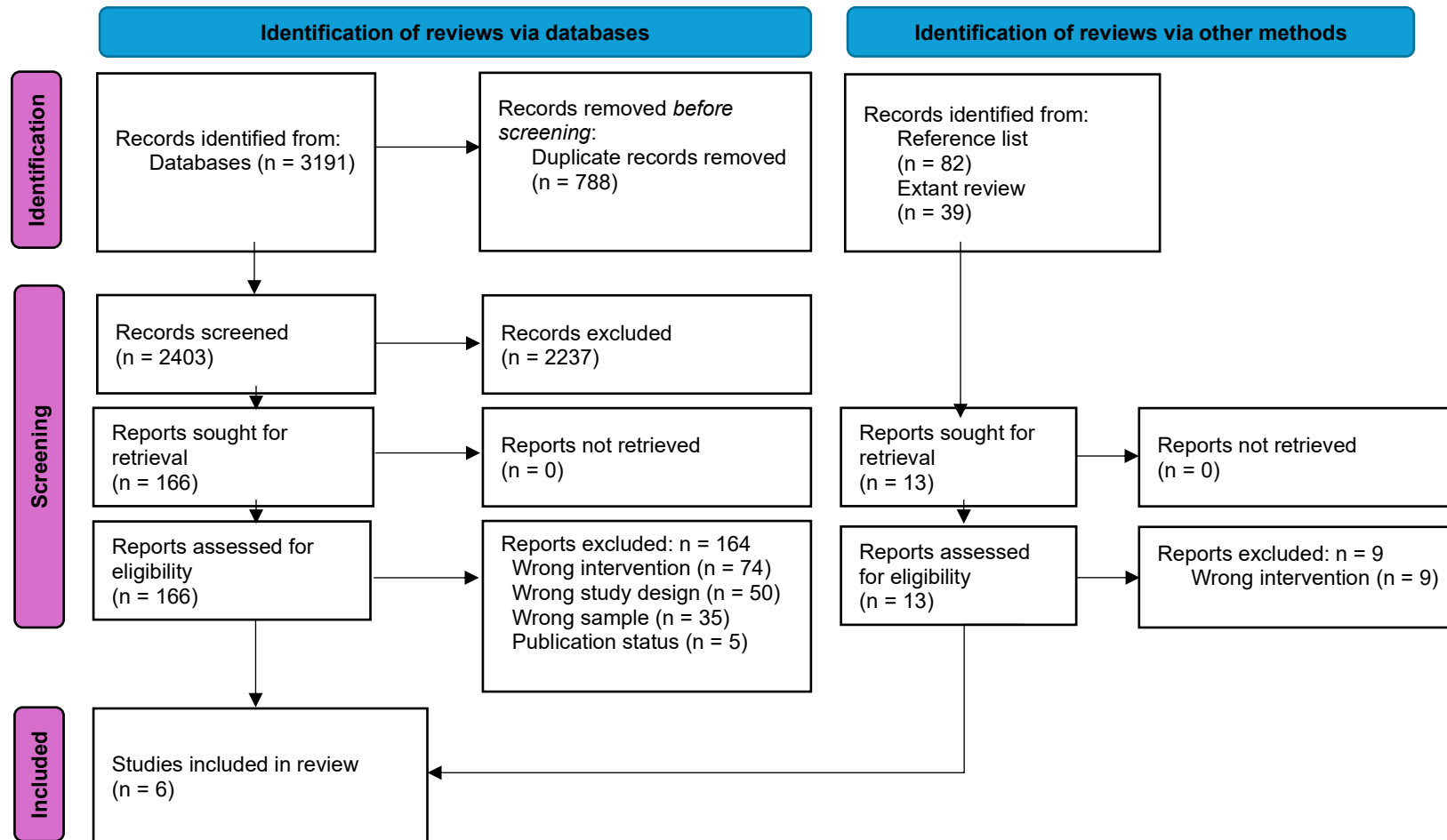
Appendix A: Sample Search Strategy

1. TI: data*
2. TI: document*
3. AB: data*
4. AB: document*
5. 1 or 2 or 3 or 4
6. TI: practitioner
7. TI: provider
8. TI: teacher
9. TI: professional
10. TI: team*
11. TI: intervention*
12. TI: clinician
13. TI: therapist
14. TI: "speech*language*pathologist"
15. TI: psychologist
16. TI: "behavior* analyst"
17. TI: "behavior* technician"
18. AB: practitioner
19. AB: provider
20. AB: teacher
21. AB: professional
22. AB: team*
23. AB: intervention*
24. AB: clinician
25. AB: therapist
26. AB: "speech* language* pathologist"
27. AB: psychologist
28. AB: "behavior* analyst"
29. AB: "behavior* technician"
30. 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30
31. TI: goal
32. TI: plan*
33. TI: individual*
34. AB: goal
35. AB: plan*
36. AB: individual*
37. 31 or 32 or 33 or 34 or 35 or 36
38. TI: progress*
39. TI: adapt*
40. TI: monitor*

41. TI: evaluat*
42. TI: inform*
43. AB: progress*
44. AB: adapt*
45. AB: monitor*
46. AB: evaluat*
47. AB: inform*
48. 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47
49. TX: (infan* OR toddler* OR preschool* OR kindergarten* OR prekindergarten OR prek OR pre-k OR "young child*" OR daycare OR "day care" OR childcare OR "child care" OR "nursery school" OR "head start" OR "birth to 3" OR "birth to three" OR "early childhood")
50. TX: (delay* OR disabilit* or disorder* OR handicap* OR impair* OR retard*)
51. TX: (program* OR treatment* OR intervent* OR therap* OR educat* OR teach* OR instruct*)
52. 5 AND 30 AND 37 AND 48 AND 49 AND 50 AND 51
53. Limit 52 to peer reviewed