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Systematic Review of Empirical Studies of Early Childhood Intervention Practitioners' Collection and Use of Data for Data-Based Decisions

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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.

Purpose

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.

Objectives

- Evaluating characteristics of practitioners' collection of data
- Evaluating practitioners' use of data-based decision making
- Drawing conclusions about the effects of practitioners' use of data-based decision making

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;
(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. Table 1 shows a summary of findings across the six studies included in this review.

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.

Table 1. 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 of 4 teachers increased the frequency of data collection after training in how to collect child instructional data.
Love 2019	Direct observation of instructional objectives	Teacher	Daily	Does training on data collection improve the quality data collected on children's instructional objectives?	3 of 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 of 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 of 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)

References of Included Studies

Buzhardt, J., Greenwood, C. R., Jia, F., Walker, D., Schneider, N., Larson, A. L., Valdovinos, M., & McConnell, S. R. (2020). Technology to guide data-driven intervention decisions: Effects on language growth of young children at risk for language delay. *Exceptional Children, 87(*1), 74-91. https://doi.org/10.1177/0014402920938003

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Love, H. R., Horn, E., & An, Z. (2019). Teaching observational data collection to early childhood preservice educators. *Teacher Education and Special Education, 42*(2), 297-319.

Pellecchia, M., Connell, J. E., Eisenhart, D., Kane, M., Schoener, C., Turkel, K., Riley, M., & Mandell, D. S. (2011). We're all in this together now: Group performance feedback to increase classroom team data collection. *Journal of School Psychology, 49*(4), 411-431. https://doi.org/10.1016/j.jsp.2011.04.003

Shepley, C., Grisham-Brown, J., Lane, J. D., & Ault, M. J. (2022). Training teachers in inclusive classrooms to collect data on individualized child goals. *Topics in Early Childhood Special Education, 41*(4), 253-266. https://doi.org/10.1177/0271121420915770

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