

Considerations Related to Developing a System for Measuring Outcomes for Young Children with Disabilities and Their Families



**Demonstrating Results for
Infants, Toddlers and Preschoolers with Disabilities and Their Families**



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Developing an outcomes system to produce data on young children with disabilities and their families is a challenging, complicated, and lengthy process. Many stakeholders representing diverse perspectives have a vested interest in this process. These stakeholders include federal officials, especially those in the Office of Special Education Programs (OSEP); the state agencies that administer the Part C and the Part B 619 programs of the Individuals with Disabilities Education Act (IDEA), including staff responsible for collecting and reporting data; local administrators and program providers; staff of other state and local programs serving young children; and the families of children with disabilities being served by Part C and Part B. Each of these groups brings a valuable perspective that needs to be considered in developing an outcomes measurement system.

The Early Childhood Outcomes (ECO) Center has prepared this paper to aid in the process of developing an outcomes system. The paper identifies some of the major decisions that will need to be made as part of the development process, many of which ultimately will be made at OSEP or elsewhere in the federal government. Other decisions will be made individually by each state. The paper is premised on the assumption that the outcomes system will be able to meet the needs of the largest number of potential users if input is collected and incorporated throughout the development process. The goal is to reach consensus, but consensus may not always be possible to achieve. One of the challenges in soliciting input and reaching consensus about how an outcomes system should be structured is helping the multiple stakeholders understand the perspectives of other stakeholders. A second challenge is breaking the work into smaller areas that can be addressed meaningfully while also understanding how a decision in one of these areas affects other decisions further down the line.

This paper classifies the decisions to be made in the service of developing an outcomes system into four categories:

1. **Conceptual considerations** address the “what” and “why” of outcomes measurement.
2. **Measurement considerations** address the tools or instruments that will be used to collect the data.
3. **Analytical considerations** address how the data will be aggregated, analyzed, and interpreted.
4. **Logistical and infrastructure considerations** address the many steps that will be required to build a system for collecting data on hundreds of thousands of children and families across the country.

Many of the decisions that will need to be made cut across more than one of these areas; that is, a decision in one area has implications for a decision in another area. Such decisions are noted when they are recognized. The successful development of an outcomes system will require anticipating the intended and unintended consequences of each decision, especially because many of the early decisions will constrain later decisions. For example, the decision about what kind of measurement to use has implications for logistics, specifically with regard to training and quality control needs. Decisions that have already been made are also noted. This paper is a working draft, prepared with the expectation that it will be revised many times. Revisions will be made on an ongoing basis as more decisions are identified and as decisions are made.

One fundamental decision that already has been made is that **an outcomes system for reporting data on young children with disabilities and their families that can be aggregated across all states and territories will be developed and implemented.** The ECO Center hopes that all those wishing to contribute input to this important and necessary effort will provide comments to assist in the process of moving forward.

Background

In *Reinventing Government*, Osborne and Gaebler (1992) introduced the concept of results-oriented government and emphasized the importance of measuring outcomes rather than inputs. They started a revolution in public administration that became codified at the federal level in the Government Performance Results Act (GPRA) of 1993. The importance of measuring outcomes has become dogma at all levels of government—local, state, and federal—and the demand for good data on outcomes has permeated all public and private program areas, including housing, health, welfare, and education (Hogan, 2001; Morley, Vinson, & Hatry, 2001).

The emphasis on outcomes also has come to include special education and children with disabilities. The driving force behind the passage of PL 94-142 in 1975 had been to provide access to a free, appropriate education, and access remained the goal for the next decade or so (Harbin et al., 1998). Concurrent with the shift in the public sector from emphasis on inputs to outcomes, findings from a national study showed that the outcomes that secondary students with disabilities were achieving fell far short of ideal (Wagner, Blackorby, Cameto, & Newman, 1993). The ensuing efforts directed at this problem have resulted in substantial progress in the last 10 years, improving the quality and availability of information on outcomes for elementary and secondary students in special education (Thurlow, Wiley, & Bielinski, 2003).

The same cannot be said for children under the age of 6 with disabilities. Children with disabilities ages 3 through 5 have been entitled to special education services since 1975. PL 99-547, passed in 1986, brought early intervention services to children from birth to 3 with disabilities and to their families. Nonetheless, in 2004, we still have no system for regularly providing outcome information on children served in the Part B Section 619 (3 to 5) and Part C (0 to 3) programs of IDEA. Performance and management assessments employing a Program Assessment Rating Tool (PART), recently conducted by the U.S. Office of Management and Budget (OMB), gave both the Part C and Preschool Part B Program scores of “0” in results and accountability. OMB’s conclusions about both programs were “results not demonstrated” and “new measures needed” (<http://www.whitehouse.gov/omb/budget/fy2004/pma.html>).

Equally troubling, local and state programs have limited capacity to produce or use child and family outcome information to examine the effectiveness of their programs and for program improvement. Programs need clear indicators of change in child and family outcomes to make results-based program and curriculum decisions. Accountability is not just about funders holding programs responsible, but also about providers using outcome data to ensure that the needs of every child are being met. As the recent President’s Commission on Excellence in Special Education (2002) noted, the focus for children with disabilities should be on results, not on process. Despite the ubiquitous demand for good data on outcomes, this need has not been met to date because the development of

outcome-based accountability systems for young children with disabilities is a daunting task, given the technical and practical challenges involved (Carta, 2002; ECRI-MGD, 1998a, b, c, d).

Definitions

Different sources use words like “outcomes” and “indicators” differently. Accordingly, for purposes of communication, the ECO Center has adopted the following definitions:

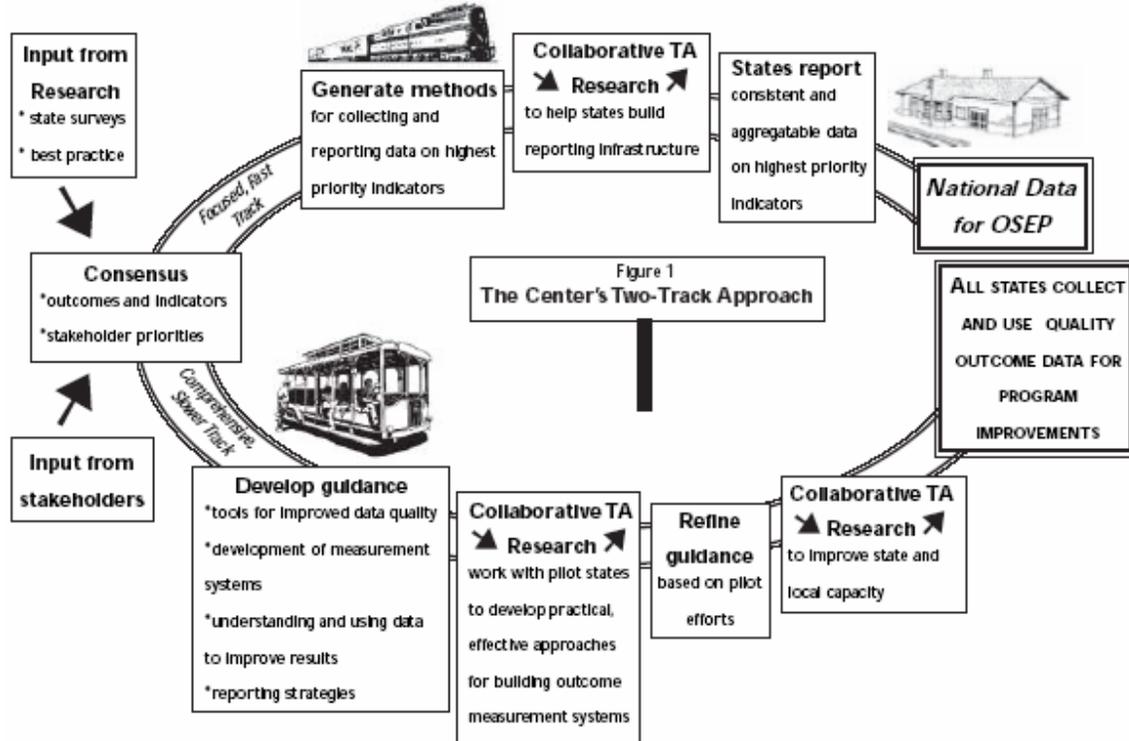
- **Outcome** A statement of a measurable condition(s) desired for the population of children with disabilities or their families (e.g., children show physical and motor competence).
- **Indicator** A measure or metric that serves to quantify whether the outcome has been obtained (e.g., an assessment of motor skills). Indicators may reflect only one aspect of an outcome or one perspective, and thus multiple indicators sometimes provide better evidence of the achievement of an outcome.
- **Measure or measurement** The method or tool used to collect the data for the indicator (e.g., a survey or a specific assessment such as the Battelle Developmental Inventory).
- **Evidence statement** A statement that incorporates a statistic and provides evidence as to whether or not an outcome has been achieved (e.g., the percentage of children showing gains in motor skills).
- **Outcomes system** A process for the regular collection, analysis, reporting, and use of indicator data.

Throughout this paper, we use the phrase “Part C” programs to describe programs for children from birth through 3 years of age and “619” programs to describe programs for children 3 to 5 years of age.

Approach of the ECO Center

A substantial initial challenge in developing an outcomes system capable of addressing the needs of users at many levels is balancing the federal government’s need for information as soon as possible with the importance of collecting and incorporating input from all levels of systems users and other stakeholders. To address this challenge, the ECO Center has proposed a “two-track” approach for child and family outcomes (Figure 1). The first, or fast, track will be constructed to meet the government’s immediate need for information. This track will be built around a small set of outcomes (three to five) that will serve as a common core across all states. The second track will be a slower, more comprehensive track, focused primarily on developing a system for addressing state and local needs for information. The slower track will incorporate the outcomes from the fast track but will be more comprehensive. It will include other outcomes as options for states. Because states may elect to include or not include these outcomes and the corresponding indicators, the resulting outcome data could differ from state to state.

Figure 1. The Center's Two-Track Approach



The ECO Center has divided the process of building an outcome system for young children with disabilities into nine major steps:

1. Identifying overall purposes for the system (including priorities).
2. Identifying areas for child and family outcomes.
3. Developing outcome statements and prioritizing the top three to five for children and families.
4. Formulating the evidence statements that will be used to demonstrate effectiveness.
5. Identifying measurement approaches (e.g., selecting instruments).
6. Identifying analytic approaches to aggregating outcome data.
7. Building a state infrastructure for collection and reporting.
8. Collecting data and submitting them to OSEP.
9. Analyzing national data.
10. Reporting national data.
11. Refining the approach based on what has been learned.

Some of the neighboring steps overlap, with work having begun on the next step before the previous step has been completed. In Step 2, the top three to five child and family outcomes will be identified because the national system initially will be built around a small set of outcomes to allow the development of the system to proceed more quickly.

The work on the remaining outcomes will proceed more slowly, with the possibility that some or all of them could remain optional for state use.

Generally, Steps 2 through 5 each will involve a multi-step process:

- Developing a draft of a recommended course of action, accompanied by a background paper that summarizes options and the rationale for the recommendation.
- Circulating the draft to obtain feedback from internal stakeholders (i.e., groups such as the Advisors who are working with the ECO Center).
- Revising the draft on the basis of that feedback.
- Circulating the revised draft both for internal stakeholder feedback and for a wider audience via the ECO Center's Web site and meetings to obtain feedback from external stakeholders.
- Finalizing the draft using the feedback received and posting the final decision on the ECO Center's Web site.

Another round of comment and revision may be needed if the comments received in either round of feedback diverge significantly. Moreover, the multi-step review and revision process for some of the steps may need to be truncated to allow the development of the outcomes system within the federal government's time constraints.

Steps 6 through 11 involve the provision of technical assistance to states and research on data collection and reporting issues. Figure 1 illustrates the two-track approach and some of the activities of the ECO Center that will support the development of an outcomes system.

Principles

To assist in weighing the numerous options to be encountered in the design of the outcomes system, the following principles have been identified:

- The outcomes system will provide information to improve programs for young children with disabilities and their families.
- The outcomes system will do no harm to young children with disabilities, their families, and the programs that serve them.
- What is measured by the outcomes system will be aligned with the goals for Part C and 619.
- The outcomes system must reflect a state-federal partnership that meets the needs of both partners insofar as possible.
- Universal design principles will be followed to the maximum extent possible in the design of the outcomes system.
- Measurement techniques employed to collect outcomes data will reflect high standards of validity and reliability.
- Major decisions about the outcome system will reflect (1) best practice as determined by research and (2) input from key stakeholders.
- To the maximum extent possible, the outcome system will not add undue burden to families, providers or local or state administrators.

Additional principles may emerge as the process of developing an outcomes system unfolds.

Timeline

Given the need to provide outcome information as quickly as possible, work must proceed rapidly on the development of the outcome system that will generate outcomes data aggregated from all states and territories. The intermediate benchmarks and end points for the development of the two tracks have not yet been decided.

Decisions

To assist in working through the many decisions that need to be made in developing an outcomes system for young children with disabilities and their families, we have identified some of the decisions that have been made and that will need to be made. In these early stages of the process, it is not always clear which decisions are better described as preliminary (meaning there might be room for additional discussion) and which decisions are final. These distinctions will become clearer as the ECO Center's work progresses. Some of these decisions have major implications, whereas others are much more limited in their scope. The decisions are presented for the four major areas: conceptual, measurement, analytical, and logistics and infrastructure. The decisions in

these areas are interrelated, and nearly all of the decisions have an impact on some other decision. In moving forward with the development of the system, the ECO Center will try to identify the implications of each decision insofar as possible.

Conceptual Issues

Decisions already made:

- ❖ The primary purpose of the “fast track” outcomes system will be to provide data for OSEP from the states on child and family outcomes that are being achieved by Part C and 619 programs (that is, to provide data needed for GPRA, PART)

Decisions to be made:

- ❖ What are the other purposes of the outcomes system?
- ❖ Which purposes are primary and which are secondary?

The answer to this question is important if conflicts across the purposes occur or if resources are insufficient to address all purposes equally well, which is highly likely.

Possible purposes:

1. To provide data for OSEP to use in monitoring state implementation of Part C and 619.
 2. To monitor the development of young children with disabilities nationwide.
 3. To provide states with data to use in responding to their own needs for outcome data (e.g., legislative requests, monitoring, technical assistance, overall program improvement).
 4. To provide regions, counties, other localities, and local programs with a valid approach to outcomes measurement and analysis that can be used for program improvement
- ❖ What overarching areas of child functioning (e.g., domains) will be included?

A traditional approach to conceptualizing child growth and development is with regard to domains. Appendix A presents domain areas that have been addressed across a range of outcomes systems and instruments for young children. It is organized around the five domains listed in Part C. Appendix A shows that the level of consistency across these efforts is relatively high in regard to how they view the domain areas. Some efforts, such as the Head Start Reporting System, are more narrowly focused and do not include all of the domains.

- ❖ Should the outcomes system also include subdomains, and, if so, which ones? How comprehensive should the system be?

Appendix B presents a compilation of domains, subdomains, and child outcomes statements. These have been taken from several sources that have recently done work in the area of child outcomes. Appendix B also presents additional decisions related to domains, subdomains, and outcomes. Because it is a compilation across many efforts, the appendix presents a fairly extensive set of subdomains. However, their inclusion there is not meant to suggest that the outcomes systems would or should reflect all of these subdomains.

- ❖ What are the **specific** outcome questions to be addressed for young children with disabilities? What are the evidence statements that will be used to determine program effectiveness?

Examples of specific outcome questions for child outcomes include the following:

- Have children in early intervention made more or less progress than expected in all domains? (Answering this question will require a clear definition of expected progress.)
- Have children in early intervention made more or less progress than expected in the domain areas in which they were receiving services?
- How does the progress in all domain areas of children in early intervention compare with that of their typically developing peers?
- How does the progress in the domain areas in which they were receiving services of children in early intervention compare with that of their typically developing peers?

This is an example of how some of the decisions cut across the four decision areas. In one sense, these are analytical questions about how the data will be analyzed. In another sense, they are conceptual questions because the answers to these questions dictate the entire structure of the outcomes systems. Many decisions are embedded in these questions such as, *What is the group or standard against which progress is to be gauged?* and, *Are outcomes to be collected on all children in all domains?*

Delineating the specific outcomes question is extremely important because the question to be addressed determines the type of evidence that will be needed from the system. Another way of framing this decision is, *What are the data that will be considered as evidence of the success of early intervention and preschool special education?* Appendix C presents examples of the different kinds of evidence statements that an outcomes system could produce. Appendix C also discusses issues related to some of the conceptual questions below.

- ❖ Will the outcomes system be based on a common set of outcomes for all young children with special needs, or will the outcomes be individualized to each child? This question is an extremely important one. Outcomes for children in Part C and 619 are individually determined. Is it possible to have a common set of outcome statements that apply to all children participating in these programs (like those presented in Appendix B)? Or does looking at program effectiveness require looking at whether each child met his or her individual goals? Currently, OSEP is proposing that a common set of outcomes be used for all children.

- ❖ Will all outcome areas be addressed for all children regardless of whether the child has a problem in that area or is receiving services in that area? For example, will information on motor functioning be included for children who have language impairments only?

Currently, OSEP is proposing that outcome information be collected for all preschool children in three areas: language/communication, preliteracy, and social-emotional. This decision also has implications for decisions related to analysis.

- ❖ Will a common set of outcome statements be developed for Part C and 619?
- ❖ Is there a need to examine data for subgroups of children (e.g., children who are blind, deaf, or have no use of lower limbs)?

This question has implications for the type of information that must be collected. If there is a need to look at information by subgroups, the system has to be sure to collect that information as well.

- ❖ Will data be incorporated on any additional service variables (e.g., number of months receiving service, nature of service received)?

Children with disabilities enter programs at all points in the calendar year and stay for varying durations, which may have implications for how data are analyzed and interpreted. With some methods for combining data across all children, the system could combine data on the progress of children who received one month of service with data for children who received 12 months of service. Is this approach acceptable?

- ❖ What are the general and specific family outcome questions to be addressed?
- ❖ Will a common set of outcomes be developed for all families of children receiving Part C and Part B 619 services, or will outcomes be individualized for each family?
- ❖ What family outcomes will be assessed?
- ❖ Will the family outcomes be the same for Part C and preschool?
- ❖ What will be the connection between this system for assessing outcomes for young children with disabilities and the other outcome assessment efforts going on in states for children with special needs, as well as for typically developing children?

Measurement Issues

Measurement issues refer to the identification of the tools or instruments that will be used to collect the data on outcomes. The measurement decisions are highly constrained by logistical concerns related to feasibility. Some measurement approaches

are considerably more resource-intensive than others. Resources are defined to include the time invested to conduct an assessment or other type of data collection, the level of skill required to carry out the assessment, the level of training required, the level of supervision required, and the cost of purchasing the assessment kit or materials. If resources are limited, the measurement approach must reflect this constraint.

Decisions already made:

A common assessment will not be required for the fast track outcomes.

Decisions to be made:

- ❖ What method of assessment will be used for children and families?
- ❖ Will the method involve administering an instrument? Will observations be used? Parent report? Service provider report?
- ❖ Will the IEP or IFSP be used as a source of information?
- ❖ Will programs be allowed to make use of the assessment data they are already collecting to provide information on outcomes?
- ❖ Will the first measurement be taken when children begin services or at the same time each year (e.g., September)?

This question assumes that additional measurement will be required above and beyond what the program already is doing. If the decision is made not to require additional measurement, this decision will not need to be addressed.

- ❖ Will the second measurement be taken when children exit, after a year, or at the same time each year (e.g., May)?
- ❖ Will it be necessary to include all children? For example, could outcomes data collection be restricted to the set of children who remain in service at least one year?
- ❖ What level of training is needed to ensure high-quality data?

Some approaches will require more training than others, which makes this a measurement issue as well as a logistics issue. In addition, validity is not just a characteristic of the instrument; validity of the results is determined in part by the process used to collect the data.

- ❖ Will all states and programs be required to select from a set of acceptable approaches for data collection?
- ❖ If an existing instrument is used, will accommodations be provided? How will the need for accommodations be determined?

- ❖ Will children who are low-functioning be given one or more alternative assessments?

Analytical Issues

Many of the analytical decisions are related to the conceptual and measurement decisions. Once decisions are made about the kind of evidence the system is intended to produce, it will be important to ensure that the measurement and analytic decisions are aligned with the type of evidence desired.

Decisions already made:

None to date.

Decisions to be made:

- ❖ Will the evidence required (see Appendix C) involve status data (i.e., data for one point in time) or child change data (i.e., data from two points in time for the same child)?

Collection of change data has implications for how soon a data system can be implemented and when national data become available, because two rounds of data collection will be needed before there are data to report.

- ❖ How are the data for children to be analyzed?
- ❖ How are the data for families to be analyzed?
- ❖ For what period will change be measured (e.g., service entry to exit, service entry to the following spring, service entry to one year later, December to December)?

The fact that children enter and leave early intervention throughout the year needs to be considered as part of this decision.

- ❖ How will the data be aggregated for children?
- ❖ How will data be aggregated for families?
- ❖ If all programs do not use the same method of assessment, how will data be converted to the same metric?
- ❖ What is the statistic (e.g., percentage, means) to be used for aggregating the data?
- ❖ Are data to be reported for all children in all domains, including those in which they have had no difficulty and have not received services?

- ❖ Are data on length of time in service to be included in the analyses, and if so, how?
- ❖ If change over time is identified as the focus, what statistical technique will be used to determine that change? (This issue will be discussed in Appendix D, which has not yet been developed.)

Note: Many of the analytical decisions are closely related to the conceptual decisions.

Logistics and Infrastructure

Logistics and infrastructure consist of all the components at the program, local, state, and national levels that must be put in place to build a system for collecting data on hundreds of thousands of children and families across the country

Decisions already made:

Work will proceed quickly on a smaller set of outcomes and more slowly on a larger set of outcomes.

Decisions to be made:

- ❖ What are the key points at which and for which stakeholder input should be incorporated?
- ❖ How is the outcomes information on children with special needs to be linked with other outcomes information being collected by other outcomes systems?

This is a logistics question as well as a conceptual question. Some, but certainly not all, states have outcomes systems in place for assessing outcomes for typically developing children. Determining the best way to link the work in these two areas will be a challenge in each state where such work is under way. In addition, national efforts, such as the Head Start Reporting System, have implications for outcomes for young children with disabilities. Potential similarities and differences across outcomes systems for the general population and for children with special needs are discussed in the next section.

- ❖ How much time will be allotted to build a system for national reporting? What are the benchmarks in the timeline?
- ❖ Must all states be ready to submit data at the first data collection, or can states come on board in waves? If a phase-in is allowed, what criteria will be used to determine which states are in which phases?
- ❖ Who will bear which of the costs associated with data collection and reporting?
- ❖ Who will collect the data on child and family outcomes? What level of expertise will be required? (Note that this is both a measurement and logistics question.)

- ❖ What kind of training, supports, or incentives will be provided to programs and states?
- ❖ Who will provide the training and who will be trained to assure what level of reliability of the data collection?
- ❖ Who will monitor the data collection to ensure that appropriate procedures are being followed and that the resulting data are of high quality?
- ❖ At what level will the results of the data collection be shared (e.g., the family, the program, the region, the state)?
- ❖ At what level will data be aggregated? Will data for individual children (and any other variable deemed necessary such as number of months of service) be aggregated at the program, state, or national level?

Applicability of Other Work on Child Outcomes to Outcomes for Young Children with Disabilities

Considerable work is under way on the development of outcomes systems in various states and nationally for programs for young children (e.g., the Head Start National Reporting System). The work on other outcomes measurement systems for young children can have some applications to the population of children with special needs. The work is relevant because...

1. The outcomes and measures themselves may be useful.
2. Many young children with disabilities are in these systems and will be participating in these accountability systems.
3. Accountability systems for Part C and 619 will need to align with those of other systems serving these children.

The population of young children with disabilities and their programs also have unique characteristics that warrant consideration and that limit the applicability of outcomes systems for programs for typically developing children when measuring outcomes for Part C and 619:

1. The population of children with special needs is far more heterogeneous than a typically developing population of children the same age. It includes children with very severe disabilities in multiple domains, as well as children with mild language delays.
2. Children with special needs already receive multiple assessments as part of eligibility determinations, program entry, and ongoing receipt of service. The assessment process for Part C is supposed to be comprehensive in the sense that all developmental and functional domains are measured. The assessment process for 619 might or might not include a comprehensive assessment.
3. Assessing children with special needs requires more skill and experience than assessing typically developing young children.

4. Eligibility for special services is based on “low performance” for many children in early intervention and preschool special education (e.g., those children who do not have a diagnosed medical condition). These children with special needs “test into” programs because they are low performers (e.g., have a motor delay), and they “test out” of them when they have achieved a certain level of functioning. Testing in and out has implications for the analysis of outcome data in that the “best” performers are always exiting the system and, therefore, are not in the next round of data collection.
5. Children with disabilities are to receive individualized packages of services to address individual needs. Because both intended outcomes and services are to be established individually, Part C or 619 services vary substantially across children and families. Part C and 619 are not **one** program, but **many** programs, each individually determined. One child could receive services in a single domain area (e.g., 1 hour of speech therapy per week to address communication), whereas another child could receive a much more comprehensive set of services (e.g., 20 hours in a community-based preschool program with consulting services from speech, physical, and occupational therapists). This contrasts with early childhood programs for typically developing children where an entire group of children attends the same program for roughly the same amount of time (e.g, three days a week, from 9 a.m. to 12 noon).
6. Children enter and leave programs at all points throughout the year (versus a new class starting together in September).
7. Children stay in the early intervention or preschool special education system varying lengths of time, depending on their progress. Some children may receive services for only a few months, whereas others may receive services from birth through the time they begin kindergarten.

Both the population and programmatic differences have implications for how an outcomes system for young children with disabilities needs to be designed. These differences have implications for what can be learned or used from outcome systems developed for typically developing children.

References

- Carta, J. (2002). An early childhood special education research agenda in a culture of accountability for results. *Journal of Early Intervention, 25*(2), 102-104.
- Early Childhood Research Institute on Measuring Growth and Development (ECRI-MGD). (1998a). *Accountability system for children birth through age eight* (Technical Report 1). Minneapolis, MN: University of Minnesota, Center for Early Education and Development.
- Early Childhood Research Institute on Measuring Growth and Development (ECRI-MGD). (1998b). *Research on development of individual growth and development indicators for children birth to age eight* (Technical Report 4). Minneapolis, MN: Early Childhood Research Institute Measuring Growth and Development.
- Early Childhood Research Institute on Measuring Growth and Development

- (ECRI-MGD). (1998c). *Selection of general growth outcomes for children birth through age eight* (Technical Report 2). Minneapolis, MN: University of Minnesota, Center for Early Education and Development.
- Early Childhood Research Institute on Measuring Growth and Development (ECRI-MGD). (1998d). *Theoretical foundations of the Early Childhood Research Institute on Measuring Growth and Development: An early childhood problem solving model* (Technical Report 6). Minneapolis, MN: University of Minnesota, Center for Early Education and Development.
- Harbin, G. L., Kochanek, T., McWilliam, R. A., Gallagher, J., Shaw, D., Tocci, L., et al. (1998). *Implementing federal policy for young children with disabilities: How are we doing?* Chapel Hill, NC: University of North Carolina, the Early Childhood Research Institute on Service Utilization, the Frank Porter Graham Child Development Institute.
- Hogan, C. (2001). *The power of outcomes: Strategic thinking to improve results for our children, families, and communities*. Washington, DC: National Governors Association.
- Morley, E., Vinson, E., & Hatry, H. (2001). *A look at outcome measurement in nonprofit agencies*. Washington, DC: Non Profit Sector Research Fund.
- Osbourne, D., & Gaebler, T. (1992). *Reinventing government: How the entrepreneurial spirit is transforming the public sector*. Reading, MA: Addison-Wesley.
- President's Commission on Excellence in Special Education; U.S. Department of Education Office of Special Education and Rehabilitative Services. (2002). *A new era: Revitalizing special education for children and their families*. Washington, DC: Author.
- Thurlow, M., Wiley, H. I., & Bielinski, J. (2003). *Going Public: What 2000-2001 reports tell us about the performance of students with disabilities* (NCEO Technical Report 35). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.
- Wagner, M., Blackorby, J., Cameto, R., & Newman, L. (1993). *What makes a difference?: Influences on post school outcomes of youth with disabilities. The third comprehensive report for the NLTS*. Menlo Park, CA: SRI International. Available at <http://www.sri.com/policy/cehs/>

Appendix A
Alternative Conceptualizations of Domain Areas for Children Birth to Age 5

Domains						
Source*	Cognitive Development	Physical Development	Communication Development	Social or Emotional Development	Adaptive Development	Other
Part C/APR	Cognitive development	Physical development including vision and hearing	Communication development	Social or emotional development	Adaptive development	
OSEP Focus Group	Early literacy (cognitive) Pre-reading Mathematics (cognitive)	Movement/ physical	Language/ communication	Social/emotional	Adaptive	
NEILS	Cognition	Motor Vision Hearing Use of arms and hands Use of legs and feet Health	Communication Articulation	Social	Independence	Behavioral engagement
ECRI-MGD	Cognitive development (use of cognitive skills to explore environment and solve problems)	Motor development (negotiating and manipulating the environment)	Language and communication (use of language to convey and comprehend communicative and social intent)	Social development (initiating, responding to, and maintaining positive social relationships)	Adaptive development or activities of daily living (taking responsibility for behavior, health and well-being, even in the face of adversity)	
NCEO (Age 3)	Academic and functional literacy	Physical health		Personal and social adjustment	Responsibility and independence	Contribution and citizenship Satisfaction

*Acronyms for sources are explained at the end of the table.

Source	Cognitive Development	Physical Development	Communication Development	Social or Emotional Development	Adaptive Development	Other
ICF (<6- under development)	Learning and applying knowledge	Mobility Body functions: Mental functions Sensory functions Voice and speech functions, etc. Body structures: Eye, ear, related structures Structures involved in voice and speech, etc.	Communication	Interpersonal interactions and relationships Major life areas		
Desired Results (California)	Learning (cognition) Early literacy (cognition)	Physical and motor competence		Social competence	Safe and healthy behaviors (adaptive)	
Head Start Outcomes	Literacy Mathematics Science Creative arts	Physical health and development	Language development	Social and emotional development		Approaches to learning
Head Start Reporting System	Vocabulary Letter-naming Phoneme deletion Early mathematics (numeracy)		Language comprehension			
Early Head Start – National Evaluation	Cognitive and language development	Health	Cognitive and language development	Social competence		Resiliency
Good Start, Grow Smart: State Child Care Plans	Literacy Prereading Numeracy					

Source	Cognitive Development	Physical Development	Communication Development	Social or Emotional Development	Adaptive Development	Other
National Education Goals Panel	Cognition and general knowledge	Physical well-being and motor development	Language development	Social and emotional development		Approaches to learning (e.g., curiosity, creativity, independence, persistence)
ABILITIES Index	Intelligence	Audition Limbs Tonicity Integrity of health Eyes Structure	Intentional Communication	Behavior		
Battelle Developmental Inventory	Cognition	Motor	Communication	Personal-Social	Adaptive	
Brigance Inventory of Early Development	Readiness Basic reading Manuscript writing General knowledge and comprehension Basic mathematics	Preambulatory motor Gross motor Fine motor	Speech and language	Social and emotional development	Self-help	
Work Sampling System (Preschool to Grade 5)	Language and literacy Mathematical thinking Scientific thinking Social studies The arts	Physical development	Language and literacy	Personal and social development		
Ages and Stages Questionnaire	Cognition	Fine and gross motor	Language	Personal-Social		
Smart Start (North Carolina)	Language/literacy Numeracy			Social skills		

Sources:

Part C/ARP—Legislation; Annual Performance Report that states must submit to OSEP

OSEP Focus Group—Group convened by OSEP to make recommendations on child and family outcomes

NEILS—National Early Intervention Longitudinal Study

ECRI-MGD—Early Childhood Research Institute on Measuring Growth and Development

NCEO—National Center for Educational Outcomes

ICF—International Classification of Functioning. A system developed by the World Health Organization. The version for young children is still under development.

Appendix B

Compilation of Domains and Subdomains Related to Outcomes for Young Children with Disabilities

Purpose:

This appendix presents a compilation of domains, subdomains, and related examples of outcomes statements in the service of the ultimate goal of developing a set of outcomes statements for young children with disabilities. The information presented draws from related efforts and compiles their compatible, but not identical, approaches. The examples have been categorized into a set of domains and subdomains that can serve as starting points for developing a framework for identifying the critical outcome areas for young children with disabilities.

Decisions that will need to be made as part of developing outcomes for young children with disabilities include:

- ❖ How comprehensive should the ultimate outcomes framework for young children with disabilities be?
- ❖ How closely aligned should the outcomes for children birth to 3 years be aligned with those for children 3 to 6 years?
- ❖ Should the outcome statements be at the domain level?
- ❖ Should there be outcome statements at the subdomain level?
- ❖ Which subdomains should be included?
- ❖ How much emphasis should be placed on the preacademic subdomain? (Note the level of detail in the Head Start outcomes in this area.)
- ❖ Are there important domains or subdomains for young children with disabilities that are not included in the table? For example, should more emphasis be given to health?
- ❖ Can outcome statements be drawn from any of the existing work or should new outcome statements be developed?

The most immediate goal is to identify or develop a core set of outcomes statements (about 3 to 5) that address the population of children participating in Part C and 619 programs nationally. The longer term goal is to develop a comprehensive set of outcome statements to guide outcomes measurement in multiple areas. The framework to be developed will serve as an organizing device for viewing children holistically and comprehensively, and will lead to the outcome statements in the critical domains and subdomains areas. The overall question to be addressed is: What do we want for children participating in these programs? In presenting this set of domains, subdomains, and outcomes, no assumptions are made about measurement. Nor is an assumption made that every outcome would or should be measured for every child participating in Part C or preschool special education. Measurement decisions will be made later in the process. Note, however, that because what is not included as an outcome will not be measured, it is important that the outcomes capture whatever should be considered as important to measure in the future. The next step is to take the compilation and revise it to serve as the framework for a set of outcomes that provide a comprehensive, yet precise, vision of what policy-makers, program administrators, program staff, and families want for young children with disabilities.

Organization:

Table B-1 is organized around six domains, the five domain areas in Part C:

- Cognitive development.
- Physical development, including vision and hearing.
- Communication development.
- Social or emotional development.
- Adaptive development.

with the addition of

- Approaches to learning.

This last domain is from the National Education Goals Panel and has corresponding outcomes statements in some of the related work, most notably Head Start.

Definitions:

- **Domain**—An overarching area of development in young children
- **Subdomain**—An area of development or functioning that can be categorized within one of the overarching domain areas. Subdomains are more specific than domains, and a domain can include many subdomains.
- **Outcome**— a statement of a measurable condition(s) desired for the population of children with disabilities or their families (e.g., children show physical and motor competence). Outcomes can be written at different levels of specificity (e.g., “the child understands and use concepts related to early literacy and math skills” to “the child shows growing ability to hear and discriminate separate syllables in words.”)
- **Indicator**— a measure or metric that serves to quantify whether the outcome has been obtained (e.g., an assessment of motor skills). Indicators may reflect only one aspect of an outcome or one perspective, and thus multiple indicators sometimes provide a better evidence of the achievement of an outcome. (There are no indicators in the following tables. This definition is provided for information.)

Sources:

- Early Childhood Research Institute on Measuring Growth and Development (ECRI-MGD) (for birth to age 8)
- Desired Results (DR) (for birth to age 14)
- Head Start Outcomes Framework (HS) (for ages 3 to 5)
- Early Head Start Outcomes (for birth to age 3).
- National Center for Educational Outcomes (NCEO) (for age 3)

These efforts differed markedly in the number of outcome statements they produced. For example, Early Head Start has five outcomes statements at the domain level. ECRI-

MGD produced five outcome statements at the domain level and 15 at the subdomain level. The Head Start outcomes framework consists of eight domains, 27 subdomains, and 100 outcomes—all at the level of subdomain or even sub-subdomains.

Notes:

Outcome statements within the same cell in the table are seen as alternative ways of expressing the same outcomes or are closely related conceptually. Outcome statements in different boxes are considered to address conceptually different outcomes, with the exception that the subdomains under a domain are more precise statements about outcomes within that domain. These distinctions are not always clear. There are multiple ways to categorize some aspects of young children’s development, because so much of that development is interrelated. As can be seen in Table B-1, what one effort may have considered as social development, another may have considered as part of communication. There is no right or wrong categorization, and the placement of any particular subdomain or outcome is open to discussion. The subdomain names were taken from across the sources and may not correspond to the name used by the source. Some of the sources did not label the subdomains.

Table B-1
Examples of Child Outcome Statements Categorized by Domains and Subdomains

Domain: Communication development	Outcome
	<p>The child uses language to convey and comprehend communicative and social intent (ECRI-MGD).</p> <p>Demonstrates competence in communication (NCEO). (listed in the Academic and functional literacy domain).</p> <p>Children show growing abilities in communication and language (DR) (listed in the Personal and social domain).</p> <p>Children demonstrate improved communication, language, and emergent literacy skills (EHS) (see also “Cognitive development”).</p>
Subdomains	
<p>Expressive communication, language expression, speaking and communicating</p>	<p>Child uses gestures, sounds, words, or sentences (including sign language and augmentative and alternative communication) to convey wants and needs or to express meaning to others. (ECRI-MGD)</p> <p>Develops increasing abilities to understand and use language to communicate information, experiences, ideas, feeling, opinions, needs, questions, and for other varied purposes (HS).</p> <p>Progresses in clarity of pronunciation and towards speaking in sentences of increasing length and grammatical complexity (HS) (see also “articulation”).</p> <p>For non-English-speaking children, progresses in speaking English (HS).</p>
<p>Receptive communication, language comprehension, listening and understanding</p>	<p>Child responds to others’ communication with appropriate gestures, sounds, words, or word combinations (including sign language and augmentative and alternative communication) (ECRI-MGD).</p> <p>Demonstrates increasing ability to attend to and understand conversations, stories, songs, poems (HS).</p> <p>Shows progress in understanding and following simple and multiple-step directions (HS).</p> <p>For non-English children, progresses in listening to and understanding English (HS).</p>

Table B-1 (Continued)

Domain: Communication development Subdomains	Outcome
Social use of language	Child uses gestures, sounds, words, or sentences (including sign language and augmentative and alternative communication) to initiate, respond to, or maintain reciprocal interactions with others (ECRI-MGD).
Vocabulary	Understands an increasingly complex vocabulary (HS). Uses an increasingly complex and varied spoken vocabulary (HS).
Articulation	Progresses in clarity of pronunciation and towards speaking in sentences of increasing length and grammatical complexity (HS) (see also “expressive communication”).

Table B-1 (Continued)

Domain: Cognitive development	Outcomes
	<p>The child uses cognitive skills to explore the environment, reason, and solve problems (ECRI-MGD). Children are effective learners (DR). Demonstrates improved communication, language, and emergent literacy skills (EHS) (see also Communication development). Demonstrates improved general cognitive skills (EHS).</p>
Subdomains	
General knowledge	<p>Child demonstrates an understanding of age-appropriate information (ECRI-MGD). Develops growing awareness of jobs and what is required to perform them (HS) (listed under “Knowledge of Family and Community”). Begins to express and understand concepts and language of geography in the contexts of the classroom, home, and community (HS) (listed under “Knowledge of Family and Community”).</p>
Reasoning and problem-solving	<p>Child solves problems that require reasoning about objects, concepts, situations, and people (ECRI-MGD). Demonstrates competence in problem-solving and critical thinking (NCEO). Children show cognitive competence and problem-solving through play and daily activities (DR). Develops increasing ability to find more than one solution to a question, task, or problem (HS). Grows in recognizing and solving problems through active exploration, including trial and error, and interactions and discussions with peers and adults (HS). Develops increasing abilities to classify, compare, and contrast objects, events, and experiences (HS).</p>

Table B-1 (Continued)

Domain: Cognitive development Subdomains	Outcomes
Memory	Child demonstrates recall of verbal and non-verbal events (ECRI-MGD).
Preacademic skills <ul style="list-style-type: none"> • Preliteracy and literacy <ul style="list-style-type: none"> ○ Reading skills (decoding, word recognition, phonemic awareness, etc.) ○ Interest in books ○ Writing • Numeracy <ul style="list-style-type: none"> ○ Number concepts ○ Measurement, order, time ○ Mathematics concepts 	Child understands and uses concepts related to early literacy and mathematical skills (ECRI-MGD). Demonstrates competence in preacademic skills. (NCEO) Children show interest in real-life mathematical concepts. Children demonstrate emerging literacy skills (DR). Note: The Head Start outcomes, which are quite detailed in regard to the preacademic skills areas, are listed in Table B-2.

Table B-1 (Continued)

Domain: Social or emotional development	Outcomes
	<p>The child initiates, responds to, and maintains positive social relationships (ECRI-MGD).</p> <p>Children are personally and socially competent (DR).</p> <p>Children demonstrate improved social behavior, emotion regulation, and emotional well-being (EHS).</p>
Subdomains	
<p>Social problem solving, self-regulation, self- control</p>	<p>Child appropriately solves problems in his/her interactions with others (ECRI-MGD).</p> <p>Copes effectively with personal challenges, frustration, and stressors (NCEO).</p> <p>Children demonstrate effective self-regulation of their behavior (DR).</p> <p>Shows progress in expressing feelings, needs, and opinions in difficult situations and conflicts without harming themselves, others, or property (HS).</p>
<p>Appropriate affect</p>	<p>Child shows affect appropriate to the social context (ECRI-MGD).</p> <p>Progresses in responding sympathetically to peers who are in need, upset, hurt, or angry; and in expressing empathy or caring for others (HS) (listed under "Social Relationships).</p>
<p>Self-concept, self-awareness, self-confidence</p>	<p>Has good self image (NCEO).</p> <p>Children show self awareness and a positive self-concept (DR)</p> <p>Begins to develop and express awareness of self in terms of specific abilities, characteristics, and preferences (HS).</p> <p>Demonstrates growing confidence in a range of abilities and expresses pride in accomplishments (HS).</p> <p>Develops ability to identify personal characteristics, including gender and family composition (HS).</p>

Table B-1 (Continued)

Domain: Social or emotional development Subdomains	Outcomes
Acceptance of diversity	<p>Children show awareness, acceptance, understanding of other’s special needs, genders, family structures, ethnicities, cultures, and languages (DR).</p> <p>Progresses in understanding similarities and respecting differences among people, such as genders, race, special needs, culture, language, and family structures (HS) (listed under “Knowledge of Family and Community”).</p>
Social interactions with peers and adults, cooperation, social relationships	<p>Child interacts with peers and adults, maintaining social interactions and participating socially in home, school, and community settings (ECRI-MGD).</p> <p>Gets along with other people (NCEO).</p> <p>Children demonstrate effective social and interpersonal skills (DR).</p> <p>Develops growing understanding of how their actions affect others and begins to accept the consequences of their actions (HS) (listed under self-control)</p> <p>Increases abilities to sustain interactions with peers by helping, sharing, and discussion (HS).</p> <p>Shows increasing abilities to use compromise and discussion in working, playing, and resolving conflicts with peers (HS).</p> <p>Develops increasing abilities to give and take in interactions; to take turns in games or using materials; and to interact without being overly submissive or directive (HS).</p> <p>Demonstrates increasing comfort in talking with and accepting guidance and directions from a range of familiar adults (HS).</p> <p>Shows progress in developing friendships with peers (HS).</p>

Table B-1 (Continued)

Domain: Adaptive	Outcomes
	<p>The child takes responsibility for his/her behavior, health, and well-being, even in the face of challenge or adversity (ECRI-MGD).</p> <p>Demonstrates age appropriate independence (NCEO).</p> <p>Is responsible for self (NCEO).</p> <p>Develops growing capacity for independence in a range of activities, routines, and tasks (HS) (listed under Social and Emotional Development).</p>
Subdomains	
Self-help	<p>Child engages in a range of basic self-help skills, including but not limited to skills in dressing, eating, toileting/hygiene and safety/identification (ECRI-MGD).</p>
Follow rules, accepts responsibility	<p>Child meets behavioral expectations (such as following directions, rules, and routines) in home, school, and community settings (ECRI-MGD).</p> <p>Complies with age-appropriate rules, limits, and routines (NCEO) (listed in the Contribution and citizenship domain).</p> <p>Accepts responsibility for age-appropriate tasks (NCEO).</p> <p>Demonstrates increasing capacity to follow rules and routines and use materials purposefully, safely, and respectfully (HS) (listed under Social and Emotional, Self Control).</p>
Safe and healthy behavior	<p>Children show an emerging awareness and practices safe and healthy behavior (DR). (listed under Children are safe and healthy – physical domain).</p> <p>Shows growing independence in hygiene, nutrition, and personal care when eating, dressing, washing hands, brushing teeth, and toileting (HS) (listed as Health Status and Practices).</p> <p>Builds awareness and ability to follow basic health and safety rules such as fire safety, traffic and pedestrian safety, and responds appropriately to potentially harmful objects, substances, and activities (HS) (listed as Health Status and Practices).</p>

Table B-1 (Continued)

Domain: Physical development	Outcomes
	<p>The child negotiates and manipulates the environment (ECRI-MGD).</p> <p>Demonstrates normal physical development (NCEO).</p> <p>Children show physical and motor competence (DR).</p> <p>Children are safe and healthy (DR).</p> <p>Children demonstrate an increased proficiency in motor skills (DR).</p> <p>Children demonstrate improved physical health and development (EHS).</p>
Subdomains	
Gross motor	<p>Child moves in a fluent and coordinated manner to play and participate in home, school, and community settings (ECRI-MGD).</p> <p>Shows increasing levels of proficiency, control, and balance in walking, climbing, running, jumping, hopping, skipping, marching, and galloping (HS).</p> <p>Demonstrates increasing abilities to coordinate movements in throwing, catching, kicking, bouncing balls, and using the slide and swing (HS).</p>
Fine motor	<p>Child manipulates toys, materials, and objects in a fluent and coordinated manner to play and participate in home, school, and community settings (ECRI-MGD).</p> <p>Develops growing strength, dexterity, and control needed to use tools such as scissors, paper punch, stapler, and hammer (HS).</p> <p>Grows in hand-eye coordination in building with blocks, putting together puzzles, reproducing shapes and patterns, stringing beads, and using scissors (HS).</p> <p>Progresses in abilities to use writing, drawing, and art tools, including pencils, markers, chalk, paint brushes, and various types of technology (HS).</p>

Table B-1 (Continued)

Domain: Physical development Subdomains	Outcomes
Fitness	Is physically fit (NCEO). Progresses in physical growth, strength, stamina, and flexibility(HS). Participates actively in games, outdoor play, and other forms of exercise that enhance physical fitness(HS).

Table B-1 (Concluded)

Domain: Approaches to learning	Outcomes
	Children demonstrate improved positive approaches toward learning, including improved attention skills (EHS).
Subdomains	
Interest in learning, initiative and curiosity	<p>Children are interested in learning new things (DR).</p> <p>Chooses to participate in an increasing variety of tasks and activities (HS).</p> <p>Develops increased ability to make independent choices(HS).</p> <p>Approaches tasks and activities with increased flexibility, imagination, and inventiveness(HS).</p> <p>Grows in eagerness to learn about and discuss a growing range of topics, ideas, and tasks (HS).</p>
Engagement and persistence	<p>Child appropriately varies or continues behavior to achieve desired goals (ECRI-MGD).</p> <p>Grows in abilities to persist in and complete a variety of tasks, activities, projects, and experiences (HS).</p> <p>Demonstrates increasing ability to set goals and develop and follow through on plans (HS).</p> <p>Shows growing capacity to maintain concentration over time on a task, question, set of directions or interactions, despite distractions and interruptions (HS).</p>

Table B-2
Head Start Outcomes Related to Preacademic Skills

Literacy	
Phonological awareness	<p>The child shows increasing ability to discriminate and identify sounds in spoken language.</p> <p>Shows growing awareness of beginning and ending sounds of words.</p> <p>Progresses in recognizing matching sounds and rhymes in familiar words, games, songs, stories, and poems.</p> <p>Shows growing ability to hear and discriminate separate syllables in words.</p> <p>Associates sounds with written words, such as awareness that different words begin with the same sound.</p>
Book knowledge and appreciation	<p>The child shows growing interest and involvement in listening to and discussing a variety of fiction and non-fiction books and poetry.</p> <p>Shows growing interest in reading-related activities, such as asking to have a favorite book read; choosing to look at books; drawing pictures based on stories; asking to take books home; going to the library; and engaging in pretend-reading with other children.</p> <p>Demonstrates progress in abilities to retell and dictate stories from books and experiences; to act out stories in dramatic play; and to predict what will happen next in a story.</p> <p>Progresses in learning how to handle and care for books; knowing to view one page at a time in sequence from front to back; and understanding that a book has a title, author, and illustrator.</p>

Table B-2 (Continued)

Literacy	
Print awareness and concepts	<p>The child shows increasing awareness of print in classroom, home, and community settings.</p> <p>Develops growing understanding of the different functions of forms of print such as signs, letters, newspapers, lists, messages, and menus.</p> <p>Demonstrates increasing awareness of concepts of print, such as that reading in English moves from top to bottom and from left to right, that speech can be written down, and that print conveys a message.</p> <p>Shows progress in recognizing the association between spoken and written words by following print as it is read aloud.</p> <p>Recognizes a word as a unit of print, or awareness that letters are grouped to form words, and that words are separated by spaces.</p>
Early writing	<p>The child develops understanding that writing is a way of communicating for a variety of purposes.</p> <p>Begins to represent stories and experiences through pictures, dictation, and in play.</p> <p>Experiments with a growing variety of writing tools and materials, such as pencils, crayons, and computers.</p> <p>Progresses from using scribbles, shapes, or pictures to represent ideas, to using letter-like symbols, to copying or writing familiar words such as their own name.</p>
Alphabet knowledge	<p>The child shows progress in associating the names of letters with their shapes and sounds.</p> <p>Increases ability to notice the beginning letters in familiar words.</p> <p>Identifies at least 10 letters of the alphabet, especially those in their own name.</p> <p>Knows that letters of the alphabet are a special category of visual graphics that can be individually named.</p>

Table B-2 (Continued)

Mathematics	
Number and operations	<p>The child demonstrates increasing interest and awareness of numbers and counting as a means for solving problems and determining quantity.</p> <p>Begins to associate number concepts, vocabulary, quantities, and written numerals in meaningful ways.</p> <p>Develops increasing ability to count in sequence to 10 and beyond.</p> <p>Begins to make use of one-to-one correspondence in counting objects and matching groups of objects.</p> <p>Child begins to use language to compare numbers of objects with terms such as more, less, greater than, fewer, equal to.</p> <p>Child develops increased abilities to combine, separate and name "how many" concrete objects.</p>
Geometry and spatial sense	<p>The child begins to recognize, describe, compare, and name common shapes, their parts and attributes.</p> <p>Progresses in the ability to put together and take apart shapes.</p> <p>Begins to be able to determine whether or not two shapes are the same size and shape.</p> <p>Shows growth in matching, sorting, putting in a series, and regrouping objects according to one or two attributes such as color, shape, or size.</p> <p>Builds an increasing understanding of directionality, order, and positions of objects, and words such as up, down, over, under, top, bottom, inside, out-side, in front, and behind.</p>

Table B-2 (Continued)

Mathematics	
Patterns and measurement	<p>The child enhances in the ability to recognize, duplicate, and extend simple patterns using a variety of materials.</p> <p>Shows increasing abilities to match, sort, put in a series, and regroup objects according to one or two attributes such as shape or size.</p> <p>Begins to make comparisons between several objects based on a single attribute.</p> <p>Shows progress in using standard and non-standard measures for length and area of objects.</p>

Table B-2 (Continued)

Science	
Scientific skills and methods	<p>The child begins to use senses and a variety of tools and simple measuring devices to gather information, investigate materials, and observe processes and relationships.</p> <p>Develops an increased ability to observe and discuss common properties, differences and comparisons among objects and materials.</p> <p>Begins to participate in simple investigations to test observations, discuss and draw conclusions, and form generalizations.</p> <p>Develops growing abilities to collect, describe, and record information through a variety of means, including discussion, drawings, maps, and charts.</p> <p>Begins to describe and discuss predictions, explanations, and generalizations based on past experiences.</p>
Scientific knowledge	<p>The child expands knowledge of and abilities to observe, describe, and discuss the natural world, materials, living things, and natural processes.</p> <p>Expands knowledge of and respect for his/her body and the environment.</p> <p>Develops growing awareness of ideas and language related to attributes of time and temperature.</p> <p>Shows increased awareness and begins understanding changes in materials and cause-effect relationships.</p>

Table B-2 (Concluded)

Creative arts	
Music	<p>The child participates with increasing interest and enjoyment in a variety of music activities, including listening, singing, finger plays, games, and performances.</p> <p>Experiments with a variety of musical instruments.</p>
Art	<p>The child gains the ability in using different art media and materials in a variety of ways for creative expression and representation.</p> <p>Progresses in abilities to create drawings, paintings, models, and other art creations that are more detailed, creative, or realistic.</p> <p>Develops growing abilities to plan, work independently, and demonstrate care and persistence in a variety of art projects.</p> <p>Begins to understand and share opinions about artistic products and experiences.</p>
Movement	<p>The child expresses through movement and dancing what is felt and heard in various musical tempos and styles.</p> <p>Shows growth in moving in time to different patterns of beat and rhythm in music.</p>
Dramatic play	<p>The child participates in a variety of dramatic play activities that become more extended and complex.</p> <p>Shows growing creativity and imagination in using materials and in assuming different roles in dramatic play situations.</p>

Appendix C

What Evidence from Child Outcome Data Will Be Needed to Examine the Effectiveness and Improve Programs for Part C or 619 Services?

The key challenge facing early childhood intervention professionals is the need to establish the standard of proof that must be met in order to endorse a program as effective.
National Research Council and Institute of Medicine. (2000). From neurons to neighborhoods: The science of early childhood development, p. 372.

To help frame discussions and feedback on developing an outcomes system, it is essential to specify the kind of data the system ultimately will be expected to produce, or, expressed another way: What is the evidence that policy-makers and others will want to see to assess the effectiveness of Part C and 619 programs and improve programs in future years? To make this question concrete, the ECO Center has prepared this appendix using specific examples. The following discussion provides examples of the kinds of “evidence statements” that ultimately could be produced in the service of evaluating the performance goal of “*All preschoolers with disabilities receiving special education and related services will improve their early language/communication, prereading, and social-emotional skills.*” Language/communication is used as the example.

The following are contrasting examples of the types of evidence that an outcome system for young children for disabilities could produce on an annual basis:

1. Evidence based on **any degree of change in individual children**, for example:
 - 96% of the children who received 619 services made gains in language/communication.

This implies a measurement is taken for the same child at two points in time. This type of evidence almost certainly will demonstrate the performance goal has been met because nearly all children receiving services will show gains over time in language/communication. The only children who would not do so would be the very few with conditions that cause their skills to regress with time. When national data are viewed from year to year, however, it is unlikely that improvement would be shown over time (i.e., from 2006 to 2007 to 2008) because the initial data would be so high that there will not be much room for improvement.

2. Evidence based on **achievement of goals**, for example:
 - 85% of the children who received 619 services achieved all of their IEP goals in language/communication.

This type of evidence might be considered the closest to the legislative intent of 619 and Part C in that it reflects the achievement of individually determined goals. It is also fraught with measurement problems, especially so for data that would be aggregated over multiple levels, in that it is likely that little consistency

exists in the specificity and number of goals being developed for children from program to program and state to state. Moreover, the determination of whether the goal has been achieved is subjective and also not systematic. This type of data might not be appropriate for an accountability system because of the measurement issues involved. Using the IFSP/IEP as a data source also could result in negative impacts on the IFSP/IEP. If achieving goals becomes the focus of accountability, the goals themselves could be set in such a way as to increase the odds that a high percentage will be met.

3. Evidence based on some **change in individual children compared against a benchmark**. This implies that a measurement is taken for the same child at two points in time and that some benchmark exists against which any change could be compared. The benchmark could be normal development or the child's own growth rate before beginning services. Examples include:

- 75% of the children who received 619 services made gains in language/communication *that were greater than expected if the child had not received services*.

This example does not specify the standard against which the child's growth is to be compared. This evidence statement could result from a broad-brush approach that allows states and localities to define the level of expected growth and then to report the number of children who exceeded it.

- 75% of the children who received 619 services made *at least 0.75 months gain for each month in the program*

The example uses rate of development to compare children with disabilities to typically developing children by looking at the amount of gain over an amount of time. The difficulty in this approach is specifying a sensible benchmark against which to evaluate whether the gains made should be considered as evidence of program effectiveness. Very few people would expect that children with disabilities would gain new skills at a rate comparable to that for typically developing children once they begin preschool special education. However, what is the rate at which they should acquire new skills—0.5 of a month per month? 0.8 of a month per month?

- 75% of the children were *either at age expectations or closer to age expectations* in their language skills after they received 619 services than they were before.

This example also compares the child with disabilities with typically developing children, but in a different way. Here, the question being asked is, Has the child made *progress toward closing the gap* between his or her use of language and where he or she should be given his or her age? This approach does not specify the amount of progress children with disabilities should make, but considers any evidence of moving closer to typical development as success.

- 75% of the children who received 619 services gained skills in language/communication *at a faster rate after receiving services than they had before.*

This example compares each child's rate of acquiring language skills after beginning services to the rate of skill acquisition before services. If the child was acquiring new skills at a rate of 0.6 of a month per month before special education and 0.7 of a month per month afterwards, the child's growth has accelerated, and this would be considered evidence of program success. This approach is appealing in that success is determined individually for each child, and it does not require a benchmark based on typically developing children. It also quantifies the amount of growth. A drawback is that this approach relies heavily on the adequacy of the measures being used. All measures (assessments) entail some degree of error, and even small degrees of error will lead to questionable projections of growth rates.

All of the change statements require two measurements separated by some amount of time. To be able to aggregate the data reasonably, the time interval has to be somewhat comparable for all children. For instance, combining gain information for children tested 6 months apart with gain information for children tested 12 months apart makes little sense. The need for a similar time interval between measurements for all children raises an important feasibility consideration, especially because young children with disabilities enter and leave services throughout the year. The information related to time in service could be taken into account in other ways such as a statistical model; however, this requires a relatively high level of technical sophistication and is challenging to explain to many audiences.

4. Evidence that is based on the **status of a group of children measured annually, but not necessarily the same children.**

- 73% of the children who received 619 services showed delays of less than one year in language/communication (in 2006).

This approach involves taking repeated snapshots of the communication skills of children participating in 619. The data would provide the overall level of language development of children in the program and provide powerful descriptive information about the communication skills of children receiving preschool special education. Because these are children with disabilities, most of whom have a delay in language and communication, the data would almost certainly show high percentages of children with delays. This kind of data is the easiest to collect. Program improvement with this evidence would involve looking at data from one year to the next to see if fewer children have delays. Because there is no reason to believe that 619 is changing the nature of the population who are receiving preschool special education (i.e., there is no reason to believe that preschoolers in 2010 as a group will have less serious language delays than preschoolers did in 2007, even after receiving services), it is difficult to see how these data, even though easy to collect and powerful as descriptive data, could be used to examine the effectiveness of the program.

There are also variations for all of these evidence statements that could make them more or less useful for program improvement and accountability decisions at the national, state, or program level. Variations include:

- *The data can be examined separately for children who did and did not receive services in a domain area.* An evidence statement based only on children who received services could be “70% of the children who received services for speech and language moved closer to typical development in communication skills.” Looking separately at children who received services in a domain area provides information on those the programs have tried to assist. Ironically, if the amount of gain for children who received services is compared with the amount for those who did not, the comparison will nearly always favor those who did not receive services. Presumably, the children who did not receive services were developing normally and, therefore, their growth will almost always be greater. Aggregating the data for those who needed and received services with the data for those who did not creates a bias in the direction of making the program look more effective because the children who did not need/receive services are presumably those children who are developing typically in that domain, and they will raise the level of gain for the group as a whole.
- *The data could be examined separately for different categories of disability or different levels of severity.* For example, “20% of the children who were deaf and received 619 services were closer to typical language development after services.” Or, “30% of the children with the most severe language delays were closer to typical development after receiving preschool special education.”
- *Evidence statements can also be constructed around averages, instead of percentages.* The examples presented above were based on a percentage of children. An alternative statistic would be an average; for example, “The average child who received 619 services was six months behind in language/communication skills.”
- *The evidence statement could incorporate the amount of time in service.* For example, “Children who received 619 services for 6 to 12 months showed accelerated growth in language skills at the end of that period.”

The examples presented in this appendix are fundamentally different examples of evidence statements and therefore would require fundamentally different approaches to the development of a system for measuring outcomes for young children with disabilities. To ensure that the development of a system proceeds in the proper direction, it is essential that the decisions about what kind of evidence statements the system ultimately needs to produce be made in the initial stages of the work. The overarching question that must be addressed is, In the year 2006, what kind of evidence does the outcome system need to be able to produce?