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*Journal of Early Intervention* 2011 33: 201 originally published online 25 October 2011

DOI: 10.1177/1053815111425929

The online version of this article can be found at:

<http://jei.sagepub.com/content/33/3/201>

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# Family Outcomes of Early Intervention: Families' Perceptions of Need, Services, and Outcomes

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Relationships between parent ratings of Part C/early intervention (EI) services and family outcomes for families of young children with disabilities were examined—specifically, the early childhood outcomes (ECO)—recommended family outcomes and family quality of life (FQOL). Measures included the Early Childhood Services Survey, the ECO Center Family Outcomes Survey, and the Beach Center Family Quality of Life Scale. Findings support a logic-model relationship between parent ratings of Part C/EI services, ECO-recommended family outcomes, and FQOL. Parent ratings of Part C/EI services were found to predict immediate family outcomes as measured by ECO-recommended family outcomes, and ECO-recommended family outcomes, in turn, predicted the broader outcome of enhanced FQOL. Implications for EI practice and evaluation are discussed.

**Keywords:** *early intervention; disability; families; outcomes*

Since the 1986 reauthorization of the Individuals With Disabilities Education Act (IDEA) and the addition of Part C, infants and toddlers with disabilities *and* their families have been receiving early intervention (EI) services. Consistent with the understanding that disability is a distinction that makes a difference in the lives of children and their families (H. R. Turnbull, 2005), Part C allows for the provision of EI services to enhance the development of infants and toddlers with disabilities and the capacity of families to meet the needs of their young children with disabilities (IDEA, 2004). Accountability for IDEA originally focused on the number and location of children and families served, but over the past decade, states have experienced increased expectation to demonstrate outcomes of services. For Part C/EI agencies, this means demonstrating that their services are generating the intended outcomes for children with disabilities and their families (Hebbeler, Barton, & Mallik, 2007). The increased focus on measuring outcomes has led to discussion over what is and is not an appropriate outcome of EI (Bailey et al., 2006; Parrish & Phillips, 2003; Summers

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et al., 2007; A. P. Turnbull, Summers, Turnbull, et al., 2007). Despite general consensus that EI is “predicated on the assumption of benefit to families” (Bailey et al., 2006, p. 229), determining appropriate outcomes for families who have a young child with a disability has been particularly challenging.

Acknowledging the need to identify and assess child and family outcomes, in 2003, the Office of Special Education Programs (OSEP) funded the Early Childhood Outcomes (ECO) Center to propose appropriate child and family outcomes and aid in the development and implementation of outcome measures for use by states and federal programs to evaluate EI/Part C and preschool/Part B programs (Bailey et al., 2006). In its effort to identify appropriate family outcomes, the ECO Center defined a family outcome as “a benefit experienced by families as a result of services received” (Bailey et al., 2006, p. 228). Based on an extensive review of the literature and input from numerous stakeholders, the ECO Center proposed five family outcomes:

1. Families know their rights and advocate effectively for their child.
  2. Families understand their child’s strengths, abilities, and special needs.
  3. Families help their child develop and learn.
  4. Families have support systems.
  5. Families are able to gain access to desired services and activities in their community.
- (Bailey et al., 2006)

In their final recommendations, Bailey and colleagues (2006) acknowledged family quality of life (FQOL) as “an ultimate goal” of EI and “one that could be enhanced if the other five outcomes were attained” (p. 243).

Other researchers have proposed FQOL as an appropriate outcome of EI services for families of young children with disabilities (Bailey, McWilliam, & Darkes, 1998; I. Brown & Brown, 2004; Dunst & Bruder, 2002; McWilliam, 2010; Summers et al., 2007; A. P. Turnbull, Summers, Turnbull, et al., 2007; Wang et al., 2006). Summers et al. (2007), for example, suggested that the ECO-recommended family outcomes represent “immediate results of [EI] services” (p. 320) that should enhance the broader outcome of FQOL. McWilliam (2010) similarly conceptualized ECO-recommended outcomes as accountability outcomes which “should be tied to the actual outcomes we desire . . . improvement in the family’s quality of life” (p. 204). Finally, Dunst and Bruder (2002) found that practitioners, administrators, and parents rated family satisfaction and improved FQOL as the most desired outcomes across Part C/EI services.

## **FQOL and Family Outcomes Research**

FQOL research has emerged from the relatively long line of research on individual quality of life (Schalock, 2004; Schalock et al., 2002; Neely-Barnes, Marcenko, & Weber, 2008). Unlike individual quality of life, however, research on conceptualization, assessment, and application of FQOL is relatively limited. Leading conceptualizations and measures of FQOL generally focus on family relationships, financial or material well-being, emotional support and well-being, and disability-related supports (I. Brown, Anand, Fung, Isaacs, & Baum, 2003; Hoffman, Marquis, Poston, Summers, & Turnbull, 2006). A review of family outcome studies, however, showed that research has focused predominantly on family outcomes other than FQOL (e.g., family well-being, adaptation, and functioning; A. P. Turnbull, Summers,

Lee, & Kyzar, 2007). Moreover, the majority of family outcome studies explore relationships between individual (e.g., disability type or severity, maternal depression or personality type) or family (e.g., family income, marital status) characteristics and family outcomes.

Despite increasing expectations for programs to demonstrate outcomes of services and general consensus that enhanced FQOL is an ultimate goal of Part C/EI services, few studies have examined how disability-related services affect family outcomes, including FQOL. Of those that have, findings have been inconsistent. Some researchers (Bailey et al., 2005; Hebbeler, Spiker, et al., 2007; Summers et al., 2007) have reported that families are generally satisfied with EI services and perceive a positive impact for themselves and their children. Others have suggested that disability-related services may not adequately meet the needs of families (Abbot, Watson, & Townsley, 2005; I. Brown et al., 2003) and that broader family outcomes of services, such as FQOL, may be limited (Abbot et al., 2005; Bailey et al., 2005; Hebbeler, Spiker, et al., 2007).

Since 2005, OSEP has required accountability for and measurement of a modified version of the ECO-recommended outcomes (i.e., families will know their rights, communicate their child's needs, and help their child develop and learn). We concur with Bailey et al. (2006) that the OSEP reporting requirements "only partially reflect the extensive input from the field regarding the range of desired family outcomes" (p. 245) and that enhanced FQOL is the ultimate outcome of Part C/EI services. We also support McWilliam's (2010) opinion that accountability outcomes should be tied to the actual outcome we desire. We believe, therefore, that Part C/EI services should be accountable for the five ECO-recommended family outcomes as well as the ultimate outcome they seek to advance—enhanced FQOL.

## Family Needs

Any discussion of family outcomes of EI presumes some *need* for services. Yet defining *need* is difficult. Theoretical definitions of need focus on the gap between one's actual and desired ability, condition, or situation (Asadi-Lari, Packham, & Gray, 2003). In other words, families with infants or toddlers with a disability *need* EI supports and services to enhance their child's development, their ability to support their child's development, and their family's well-being. Two points, however, require consideration—*who* determines families' needs and *how* are perceptions of need influenced?

Considering *who* determines family needs, the inclusion of a family-driven assessment of the family's resources, priorities, and concerns in Part C/EI assessments and program development suggests that families and EI professionals determine family needs together. This is consistent with theoretical models (Asadi-Lari et al., 2003; Magi & Allander, 1981) that emphasize the need for practitioners and clients to determine needs jointly. Joint determination of needs, and thereby services, is important as practitioners and families conceptualize need differently (Magi & Allander, 1981; Xu, 2008). Research suggests, however, that Individualized Family Service Plans (IFSP) often do not reflect families' concerns and priorities (Jung & Baird, 2003; Ridgley & Hallam, 2006; Vaughn, Bos, & Schumm, 2007). Instead, "Many IFSPs still reflect what the professionals determine to be a need instead of what the family believes its needs are" (Xu, 2008, p. 4). This is concerning as EI services that do not align with families' perceptions of need are less likely to have a positive impact on family outcomes.

A second consideration is *how* practitioners' and families' perceptions of need are influenced. A criticism of health care needs assessment is that need is based on existing services (Asadi-Lari et al., 2003). Applied to EI, this means that any determination of families' need, whether made by practitioners, families, or jointly, is based on the services included in Part C of IDEA (e.g., service coordination, speech-language therapy, parent training). A consequence is that needs are based on existing and available EI services. Needs determined by existing services may or may not reflect accurately the needs of infants and toddlers with disabilities and their families. Perceptions of need are also relative to time, place, and individual families' characteristics and beliefs (Magi & Allander, 1981). Consequently, determining exactly what services families of infants and toddlers with disabilities need and evaluating the effectiveness of those services is a complex task.

### Family Outcomes Logic Model

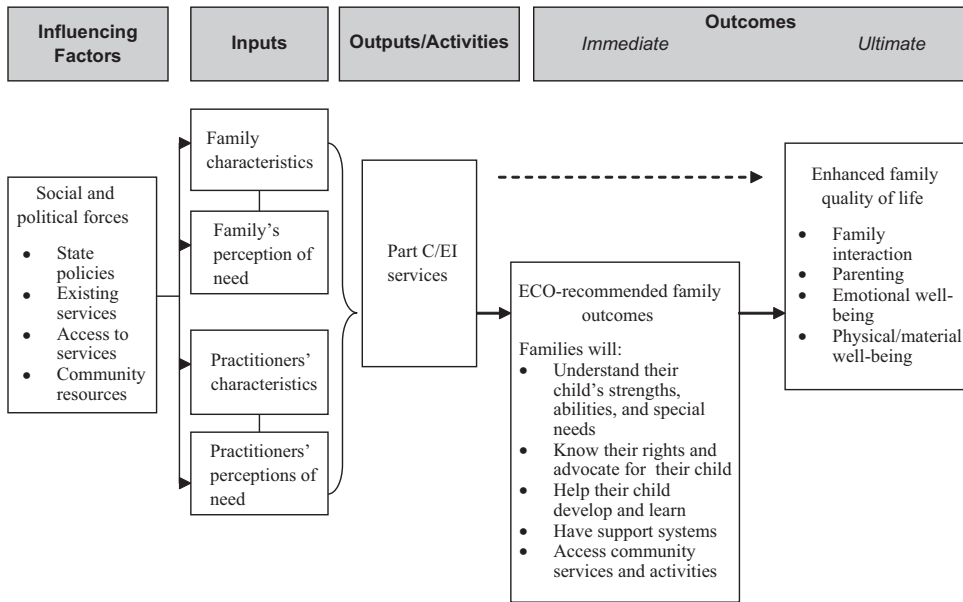
While current OSEP requirements for measuring and reporting family outcomes may be limited in scope, EI programs are now responsible for family outcomes. Exactly how EI services relate to family outcomes, however, is unclear. The overarching purpose of this study was to examine relationships between Part C/EI services and family outcomes. Specifically, we sought to test the proposition raised by Bailey and colleagues (2006) and supported by Summers et al. (2007) and McWilliam (2010) that FQOL is a global outcome of services that is, in itself, the result of achieving such immediate outcomes as increased knowledge and skills related to children's development needs.

The relationships among EI services, ECO-recommended family outcomes, and FQOL can be conceptualized as a logic model (Connell & Kubisch, 1996; Weiss, 1997). Figure 1 illustrates the hypothesized relationship between inputs (family and practitioner characteristics and perceptions of need), outputs/activities (EI services), immediate effects of those activities (the family outcomes proposed by the ECO Center), and ultimate impacts (long-term outcomes, FQOL in this case; Kellogg Foundation, 2001). Figure 1 also shows the social/political factors that influence these relationships (i.e., state policies, existing services, access to services, community resources). Based on logic modeling principles, we propose a path relationship in which parent ratings of how well Part C/EI services met their perceived needs will predict immediate outcomes for families as conceptualized by the ECO Center. Furthermore, achieving these outcomes will predict the broader outcome of FQOL. Based on this overall premise, the specific purposes of this study were to (a) determine whether parent ratings of Part C/EI services predict family outcomes (i.e., ECO-recommended family outcomes and FQOL) and (b) clarify the relationship between ECO-recommended family outcomes and the broader construct of FQOL.

## Method

This study was part of a larger research project conducted in partnership with the Kansas Department of Health and Environment (KDHE) in which outcomes of Part C programs and services were examined. At the beginning of our study, there were 36 Part C Infant/Toddler networks in Kansas. KDHE staff identified seven pilot sites comprising 11 Infant/Toddler

**Figure 1**  
**Logic model for family outcomes of Part C/EI services**



Note: EI = early intervention; FQOL = family quality of life; ECO = early childhood outcomes. The dashed arrow between Part C/EI services and enhanced FQOL represents an indirect relationship.

networks, selected to represent the various geographic regions of the state, in which to test child and family outcomes of EI services.

## Recruitment

State-level Part C staff invited all families receiving Part C/EI services in the seven identified pilot sites to participate in this Family Outcomes Study. Although KDHE staff did not disclose the total number of initially solicited families, an estimated 2,800 families were enrolled in Part C/EI programs across the seven pilot sites at the time of recruitment (KDHE, 2010). Interested families were asked to return response forms, which included family contact information and preference for mail or electronic surveys, to KDHE. We received a total of 119 initial response forms from KDHE. We then sent either paper or electronic survey packets, both formatted using Snap Surveys software to families who returned the response form. We sent a web link to the survey to families who requested electronic versions. For families who indicated a preference for paper surveys, we sent scannable paper surveys and self-addressed stamped envelopes for return of completed surveys. After two follow-up notices, we received a total of 83 surveys. After eliminating 6 surveys with more than 25% of the data missing, we had a total of 77 surveys (45 online surveys and 32 paper surveys) with a minimum of 75% of items completed. We downloaded both versions into a Snap database and then converted them into an SPSS (version 15.0) database.



## Participants

Participants in this study were families of young children with disabilities receiving Part C/EI services at the time of recruitment ( $N = 77$ ). The large majority (90.9%) of families continued to receive Part C/EI services at the time of data collection; however, a small minority (9.1%) had children who turned 3 and transitioned out of Part C/EI services in the 2-month interim between recruitment and data collection. Consistent with previous research on EI (Bayat, 2007; Simmerman, Blacher, & Baker, 2001; Summers et al., 2007), the large majority of family respondents were mothers (96%). The large majority of family respondents also identified their race/ethnicity as White (92.2%). Both African American and Hispanic ethnicities were underrepresented, despite the fact that Spanish versions of our invitation letters were sent to known non-English speaking families. At the time of recruitment, children ranged in age from <1 year to 3 years. At the time of data collection, approximately 2 months later, children ranged in age from <1 year to 3 years 2 months with the majority of children 1 to 3 years of age (81.8%). More than two thirds of family respondents identified their child's primary disability as developmental delay (35.1%) or speech-language impairment (35.1%). The average duration of Part C/EI services was approximately 1.5 years ( $M = 1.44$ ,  $SD = 0.60$ ). Table 1 presents demographic information on participating families.

## Measures

We used three measures, including the Early Childhood Services Survey (ECSS), Family Outcomes Survey (FOS), and Beach Center Family Quality of Life Scale.

*ECSS.* The ECSS assesses families' perceptions of their disability-related needs and the extent to which EI services meet those perceived needs (Summers et al., 2007). The ECSS includes 20 disability-related services based on the list of child and family services defined in the Part C regulations as appropriate for EI (FR Doc 07-2140, 34 C.F.R. 303.12, 2007; e.g., occupational and speech therapy, parent information and training, service coordination) and services provided by Part C programs in Kansas (e.g., respite care). For each service, participants indicated either "Yes" they perceived a need for the service, or "No" they did not. Table 2 shows how many families indicated each number of perceived needs.

For services to which respondents replied "Yes" they perceived a need, they then rated how well EI services met that perceived need on a scale from 1 to 3 (1 = *did not meet need*, 2 = *somewhat*, or 3 = *very well*). Table 3 presents the complete list of services, number and percentage of families who indicated a need for each service, and parent ratings for each service. For those items for which a need was perceived (i.e., respondents indicated "Yes" there was a need), we used mean item-level scores of respondents' perception of how well the need was met (i.e., *did not*, *somewhat*, or *very well*). Higher scores indicate perceived needs were better met, whereas lower scores indicate perceived needs were less well met. Reliability analysis for the ECSS was moderate (Cronbach's  $\alpha = .71$ ) across the 20 items.

The ECSS was relevant for use in this study for two reasons. First, we were interested in how families, as opposed to EI practitioners, perceived their disability-related needs and the extent to which those needs were met. Second, the ECSS is intended to measure families'

**Table 1**  
**Participant Demographics (N = 77)**

Item	<i>n</i>	%
Family respondents		
Mother	74	96.1
Father <sup>a</sup>	3	3.9
Child's sex		
Female	42	54.4
Male	33	42.9
Missing	2	2.6
Nature of child's primary disability		
Autism spectrum disorder	3	3.9
Developmental delay	27	35.1
Speech or language impairment	27	35.1
Mental retardation	2	2.6
Physical disability	3	3.9
Vision impairment/blindness	1	1.3
Health impairment	3	3.9
Other disability <sup>b</sup>	8	10.4
No specific diagnosis	3	3.9
Age of child when referred for early intervention services		
Birth to 1 year	36	46.8
1 to 2 years	33	42.9
2 to 3 years	4	5.2
Missing	4	5.2
Duration of early intervention services		
Less than 1 year	4	5.2
Greater than 1 year but less than 2 years	33	42.9
Between 2 and 3 years	36	46.8
Missing	4	5.2
Race/Ethnicity		
White	71	92.2
Hispanic	2	2.6
American Indian/Alaskan Native	1	1.3
Asian or Pacific Islander	3	3.9
Income level <sup>c</sup>		
Above Federal Poverty Level	67	87.1
Below Federal Poverty Level	9	11.7
Missing	1	.01

<sup>a</sup>One of the 77 respondents was a grandfather.

<sup>b</sup>Other diagnoses included failure to thrive, congenital heart defect, Down syndrome, Russell–Silver syndrome, prematurity, and osteoporosis.

<sup>c</sup>Federal poverty level is based on a ratio between number of household members and income, from the U.S. Department of Health and Human Services (U.S. Department of Health and Human Services, 2006).

perceptions of services as opposed to specific service providers. This is important since some EI services (e.g., special equipment, parent training) may be provided by multiple practitioners from various disciplines. This enabled us to consider how Part C/EI services addressed perceived needs of young children with disabilities and their families across providers.



**Table 2**  
**Frequency and Percentage of Families Indicating**  
**Each Number of Perceived Needs ( $N = 77$ )**

Number of perceived needs	<i>n</i>	%
1	8	10.4
2	9	11.7
3	11	14.3
4	8	10.4
5	9	11.7
6	4	5.2
7	3	3.9
8	10	13.0
9	4	5.2
10	5	6.5
11	0	0
12	2	2.6
13	3	3.9
14	1	1.3
Total	77	100

**Table 3**  
**Part C/EI Services, Number of Families Indicating**  
**Perceived Need, and Part C/EI Service Ratings**

Service	Indicated perceived need for service ( $N = 77$ )		Parent ratings of how well Part C/EI services met perceived need (number of respondents indicating a need)			
	Yes	%	Not	Some	Very well	Missing
Health services	53	68.8	0	8	43	2
Counseling/psychological services for child	4	5.2	1	2	1	0
Behavior support	10	13.0	1	2	7	0
Special equipment	19	24.7	0	4	14	1
Early intervention/developmental services	31	40.3	0	5	25	1
Hearing and/or vision services	36	46.8	0	5	30	1
Physical and/or occupational therapy	45	58.4	2	6	37	0
Speech/language therapy	59	76.6	0	12	46	1
Orientation and mobility services	3	3.9	0	2	1	0
Service coordination	33	42.9	0	6	26	1
Transition planning	18	23.4	2	4	11	1
Transportation services	5	6.5	0	1	4	0
Respite care	7	9.1	3	3	1	0
Information about child's disability	30	39.0	1	6	23	0
Parent training	19	24.7	2	4	13	0
Information about services	28	36.4	1	7	19	1
Information about legal rights	4	5.2	0	2	2	0
Counseling services for family	6	7.8	1	1	4	0
Parent support group	10	13.0	6	1	3	0
Sibling support group	4	5.2	1	2	0	0
Other	5	5.2	2	1	2	0

Note: EI = early intervention. Other identified needs included aquatic therapy, socialization skills, and bereavement support.

*FOS.* The FOS measures outcomes directly related to the five proposed ECO Center family outcomes (i.e., families will understand their child's strengths, abilities, and special needs; know their rights and advocate effectively for their children; help their children develop and learn; have support systems; and access desired services, programs, and activities in their community; Bailey et al., 2006). The survey includes 3 items for each outcome area with a total of 15 items. Parents rate each item on a 7-point scale to indicate amount (e.g., 1 = *we are just beginning to understand*, 3 = *we understand some*, 5 = *we understand a good amount*, or 7 = *we understand a great deal*) or frequency (e.g., 1 = *seldom*, 3 = *sometimes*, 5 = *usually*, or 7 = *almost always*) as appropriate. On 2 items, one regarding the family's child care and the other regarding participation in activities with other children, families could indicate they did not want child care or their child to participate in activities with other children. As only 24 of 77 respondents indicated they both wanted child care and rated their child care, this item was removed prior to analyses. Table 4 shows the five ECO-recommended family outcomes and 14 related survey items used in this study. Mean item-level scores for the 14 items were calculated with lower scores indicating lesser achievement and higher scores indicating greater achievement of the item. Reliability analysis revealed high internal consistency (Cronbach's  $\alpha > .88$ ) across the 14 items.

*Beach Center Family Quality of Life Scale.* The FQOL Scale measures families' perceived satisfaction in five domains of life: (a) Family Interaction, (b) Parenting, (c) Emotional Well-Being, (d) Physical/Material Well-Being, and (e) Disability-Related Supports. The scale comprises 25 items with a subscale for each domain. Examples of items include "My family solves problems together" (i.e., Family Interaction), "My family members help the children with schoolwork and activities" (i.e., Parenting), "My family has the support we need to relieve stress" (i.e., Emotional Well-Being), "My family has a way to take care of our expenses" (i.e., Physical/Material Well-Being), and "My child with special needs has support to make progress at home" (i.e., Disability-Related Support). Evaluating the psychometric validity of the FQOL Scale, Hoffman et al. (2006) found the item-level overall FQOL model to have acceptable fit (comparative fit index [CFI] = 0.87, root mean square error of approximation [RMSEA] = .07) and the subscale-level FQOL model to have excellent fit (CFI = 1.00, RMSEA = .00). In addition, they reported high internal reliability for the full scale (25 items, Cronbach's  $\alpha = .94$ ) and subscales (Cronbach's  $\alpha = .80-.92$ ) and statistically significant 3-month test-retest reliability correlations across all subscales ( $r = .60-.77$ ,  $p \leq .01$ ).

Zuna, Selig, Summers, and Turnbull (2009) examined the validity of a modified version of the FQOL Scale with 21 items across the four domains of Family Interaction, Parenting, Emotional Well-Being, and Physical/Material Well-Being (deleting the Disability-Related Supports domain). Results included acceptable to good model fit (CFI = 0.91, RMSEA = .057), excellent full-scale internal reliability (Cronbach's  $\alpha = .92$ ), and good to acceptable internal reliability (Cronbach's  $\alpha = .77-.85$ ) for the subscales. Given similarities between some of the FQOL disability-related items and ECSS items, we used the modified FQOL Scale, without the Disability-Related Supports domain, to avoid overestimating correlations between independent and outcome variables. Participants rated their satisfaction on a scale from 1 (*very dissatisfied*) to 5 (*very satisfied*). Mean item scores were used to represent average FQOL with higher scores indicating greater satisfaction. Reliability analysis of the

**Table 4**  
**ECO-Recommended Family Outcomes and Related FOS Items**

Family outcome	Survey item
Families will understand their child's strengths, abilities, and special needs	<ol style="list-style-type: none"> <li>1. Your child is growing and learning. How much does your family understand about your child's development?</li> <li>2. Some children have special health needs, a disability, or are delayed in their development. These are often referred to as "special needs." How familiar is your family with your child's special needs?</li> <li>3. Professionals who work with you and your child want to know if the things they do are working. How often is your family able to tell if your child is making progress?</li> </ol>
Families will know their rights and advocate for their child	<ol style="list-style-type: none"> <li>4. A variety of programs and services may be available to help your child and family. How much does your family know about the programs and services that are available?</li> <li>5. Families often meet with early intervention professionals to plan services or activities. How comfortable is your family in these meetings?</li> <li>6. Families of children with special needs have rights, including what to do if you are not satisfied. How familiar is your family with your rights?</li> </ol>
Families will help their child develop and learn	<ol style="list-style-type: none"> <li>7. Families help their children develop and learn. How much does your family know about how to help your child develop and learn?</li> <li>8. Families try to help their children learn to behave the way they would like. How much does your family know about how to help your child learn to behave the way your family would like?</li> <li>9. Families work with professionals to help their children learn and practice new skills at home or in their communities. How often does your family help your child learn and practice these new skills?</li> </ol>
Families will have support systems	<ol style="list-style-type: none"> <li>10. Many people feel that talking with another person helps them deal with problems or celebrate when good things happen. How often does your family have someone your family trusts to listen and talk with when they need it?</li> <li>11. Families sometimes must rely on other people for help when they need it, for example, to provide a ride, run an errand, or watch their child for a short period of time. How often does your family have someone you can rely on for help when your family needs it?</li> <li>12. Most families have things they enjoy doing. How often is your family able to do the things your family enjoys?</li> </ol>
Families will be able to access their community	<ol style="list-style-type: none"> <li>13. All children need medical care. How well does your family's medical care meet your child's special needs?</li> <li>14. Many families want their child to play with other children or participate in religious, community, or social activities. How often does your child participate in these activities right now?</li> </ol>

Note: ECO = Early Childhood Outcomes Center; FOS = Family Outcomes Survey. One item under the goal for accessing their community asked families about the need for and their satisfaction with child care. This item was removed due to limited response.

FQOL Scale showed high internal consistency within this sample (Cronbach's  $\alpha = .93$ ) across 21 items.

### Data Analysis

Data analysis included descriptive statistics of demographic variables, ECSS ratings, FOS scores, and FQOL scores. We used zero-order Pearson correlations to identify potential

**Table 5**  
**Satisfaction Ratings of Part C/EI Services, ECO-recommended**  
**Family Outcomes, and Family Quality of Life (*N* = 77)**

Item	<i>M</i>	<i>SD</i>	Range
Parent ratings of Part C/EI services	2.77	0.34	1.40-3.00
ECO-recommended family outcomes	5.49	0.83	2.82-7.00
FQOL	4.40	0.44	3.48-5.00

Note: EI= early intervention; ECO = early childhood outcomes; FQOL = family quality of life. Mean scores reflect item-level averages.

covariates and ANOVA with post hoc comparisons to test for group differences based on Infant/Toddler networks and degree of need. Finally, we used a series of regression analyses to test the relationships among independent (i.e., parent ratings of Part C/EI services), mediator (i.e., ECO-recommended family outcomes), and dependent (i.e., FQOL) variables.

## Results

We used descriptive statistics and regression analyses to examine the relationships among Part C/EI services and family outcomes. In this section, we present the descriptive statistics followed by analysis of the relationships among parent ratings of Part C/EI services, ECO-recommended family outcomes, and FQOL.

### Descriptive Statistics

On average, parents of infants and toddlers with disabilities perceived the need for 5.57 (*SD* = 3.54) services with the total number of perceived needs ranging from 1 to 14 (see Table 2 for the number of families who indicated each number of perceived needs). Parents generally reported that Part C/EI services met their needs somewhat or very well (*M* = 2.77, *SD* = 0.34). Table 3 includes the number and percentage of families who indicated a perceived need for each service as well as parent ratings for each service. Parents also generally reported a fair to good understanding of their child's abilities, needs, services, and rights. The mean score for the FOS was 5.49 (*SD* = 0.83) with scores ranging between 2.82 and 7.00. Similarly, families were generally satisfied with their overall quality of life. FQOL scores ranged from 3.48 to 5.0 with a mean score of 4.40 (*SD* = 0.44). Table 5 presents means and standard deviations for all measures.

Prior to conducting regression analyses, we used Pearson correlations to identify potential covariates and ANOVA to test for group differences. FOS scores were not statistically correlated with race/ethnicity ( $r = -.03, p = .79$ ), marital status ( $r = -.20, p = .08$ ), household income ( $r = .21, p = .07$ ), type of disability ( $r = -.07, p = .56$ ), or duration in Part C ( $r = -.05, p = .66$ ). Similarly, FQOL scores were not statistically correlated with race/ethnicity ( $r = -.14, p = .23$ ), marital status ( $r = -.14, p = .24$ ), household income ( $r = .13, p = .25$ ), type of disability ( $r = .03, p = .82$ ), or duration in Part C ( $r = -.004, p = .97$ ). We then tested for differences in dependent (i.e., parent ratings of Part C/EI services), mediator (i.e., ECO-recommended

family outcomes), and outcome (i.e., FQOL) variables as a function of the various Infant/Toddler networks. An ANOVA revealed no statistically significant difference in parent ratings of Part C/EI service adequacy,  $F(10, 66) = 1.39, p = .20$ , FOS scores,  $F(10, 66) = 1.85, p = .07$ , or FQOL scores,  $F(10, 66) = .594, p = .81$ , as a function of Part C Infant/Toddler networks. Finally, using the number of perceived needs reported by families, we created a categorical variable to represent degree of perceived needs (i.e., 1-2 perceived needs = minimal needs, 3-6 perceived needs = moderate needs, 7 or more needs = high needs). An ANOVA showed no statistically significant difference in parent ratings of Part C/EI services,  $F(2, 74) = 2.28, p = .11$ , or FQOL,  $F(2, 74) = 1.86, p = .16$ , as a function of minimal, moderate, or high perceived needs. There was, however, a statistically significant difference in FOS scores,  $F(2, 74) = 3.27, p = .04$ . Post hoc analysis using Tukey's honestly significant difference, least significant difference, and Bonferroni methods showed that families with minimal perceived needs had higher FOS scores ( $M = 5.89, SD = 0.74$ ) than those with high perceived needs ( $M = 5.25, SD = 0.93$ ). FOS scores for families with moderate perceived needs were not statistically different from either the minimal or high perceived needs groups. Nonetheless, to control for variance related to the degree of perceived needs, it was included as a covariate in subsequent regression analyses.

### **Relationships Between Parent Ratings of Part C/EI Service Adequacy and Family Outcomes**

We used a series of linear regression analyses to test the logic-model theory that ECO-recommended family outcomes are immediate results of Part C/EI services that, in turn, lead to changes in FQOL. Consistent with the logic model, we theorized a path (i.e., mediator) relationship in which parent ratings of Part C/EI services would predict ECO-recommended family outcomes that would, in turn, predict FQOL (Baron & Kenny, 1986; Miles & Shevlin, 2001). Specifically, we examined whether the mediator variable (i.e., ECO-recommended family outcomes) explained, either completely or partially, the relationship between parent ratings of Part C/EI services and FQOL (Baron & Kenny, 1986).

Table 6 presents correlations between all variables. Results revealed that the degree of perceived needs was inversely related to parent ratings of Part C/EI services ( $r = -.23, p = .04$ ) and FOS scores ( $r = -.28, p = .01$ ), although these correlations are relatively weak. Parent ratings of Part C/EI services were more strongly and positively correlated with FOS ( $r = .67, p < .001$ ) and FQOL ( $r = .45, p < .001$ ) scores. The FOS and FQOL scores were also positively correlated ( $r = .58, p < .001$ ). To establish a mediator, or path, relationship, we used a series of three regression analyses to test the following four conditions after controlling for variance related to the degree of perceived needs: (a) parent ratings of Part C/EI services predict FQOL, (b) parent ratings of Part C/EI services predict ECO-recommended family outcomes, (c) ECO-recommended family outcomes predict FQOL after controlling for parent ratings of Part C/EI services, and (d) the effect of parent ratings of Part C/EI services on FQOL is reduced or eliminated after controlling for ECO-recommended family outcomes (Baron & Kenny, 1986, Holmbeck, 1997; Miles & Shevlin, 2001). All variables were centered prior to analysis to decrease multicollinearity and increase interpretability of interaction results (Miles & Shevlin).

**Table 6**  
**Correlations Between Covariate (Degree of Need), Independent (Parent Ratings of Part C/EI Services), Mediator (ECO-Recommended Family Outcomes), and Outcome (FQOL) Variables**

	Degree of need	Parent ratings of Part C/EI services	ECO-recommended family outcomes	FQOL
Degree of need	—			
Parent ratings of Part C/EI services	$r = -.23^*$ $p = .046$	—		
ECO-recommended family outcomes	$r = -.28^{**}$ $p = .01$	$r = .67^{**}$ $p < .001$	—	
Family quality of life	$r = -.22$ $p = .06$	$r = .40^{**}$ $p < .001$	$r = .50^{**}$ $p < .001$	—

Note: EI= early intervention; ECO = early childhood outcomes; FQOL= family quality of life.  $N = 77$ . Degree of need is defined as minimal (1-2 perceived needs), moderate (3-6 perceived needs), and high (7+ perceived needs).

\* $p < .05$ . \*\* $p < .01$ .

For the first two multiple regression analyses, we included the covariate (i.e., degree of perceived needs) and predictor variable (i.e., parent ratings of Part C/EI services) hierarchically in the model. Results showed that, after controlling for degree of perceived needs, parent ratings of Part C/EI services significantly predicted FQOL,  $b = 0.47$ ,  $SE = .14$ ,  $t(75) = 3.37$ ,  $p < .001$ , and FOS scores,  $b = 1.55$ ,  $SE = .22$ ,  $t(75) = 7.32$ ,  $p = .01$ . Parent ratings of Part C/EI services also explained a statistically significant proportion of variance in both FQOL,  $R^2 = .13$ ,  $t(75) = 3.37$ ,  $p < .001$ , and FOS scores,  $R^2 = .37$ ,  $t(75) = 7.32$ ,  $p = .01$ , accounting for 13% ( $r = .36$ ) and 37% ( $r = .62$ ) of variance, respectively.

We then conducted a third multiple regression analysis simultaneously entering the predictor (i.e., covariate, independent, mediator) variables to determine whether (a) ECO-recommended family outcomes predicted FQOL after controlling for degree of perceived needs and parent ratings of Part C/EI services and (b) the effect of parent ratings of Part C/EI services on FQOL was reduced after controlling for ECO-recommended family outcomes. Researchers have noted that simultaneous entry of predictor variables is advantageous when testing mediator models because it provides unique effects of both the predictor and mediator variables. As a result, the likelihood of overestimating the effects of either predictor variable is reduced (Baron & Kenny, 1986; Holmbeck, 1997). After controlling for degree of perceived needs and parent ratings of Part C/EI services, FOS scores predicted FQOL,  $b = 0.22$ ,  $SE = .07$ ,  $t(74) = 3.04$ ,  $p = .003$ , uniquely accounting for 9.3% ( $r = .31$ ) of variance in FQOL scores. Finally, after accounting for the effect of ECO-recommended family outcomes, parent ratings of Part C/EI services no longer significantly predicted FQOL,  $b = 0.13$ ,  $SE = .17$ ,  $t(74) = 0.73$ ,  $p = .47$ , and decreased in the proportion of variance explained from 13% ( $r = .36$ ) to 0.5% ( $r = .07$ ). A Sobel test (Preacher & Hayes, 2004) confirmed that the decrease in effect size was significant ( $p = .04$ ). Table 7 includes unstandardized and standardized beta weights,  $t$  values, and significance levels for all regression analyses. Figure 2 demonstrates how ECO-recommended family outcomes mediated the relationship between parent ratings of Part C/EI services and FQOL.



**Table 7**  
**Regression Analyses of Mediating Effects of ECO-Recommended Outcomes on Parent Ratings of Part C/EI Services and FQOL**

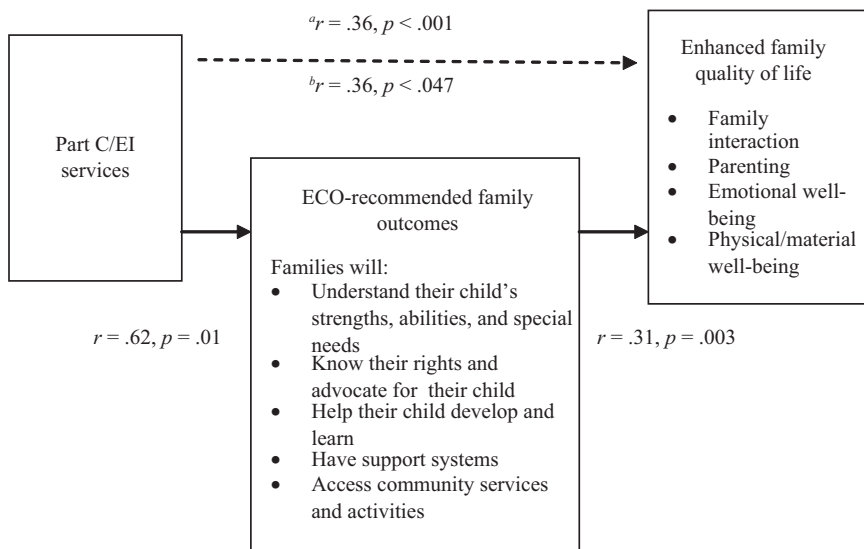
Variable	Unstandardized $\beta$	Standardized $\beta$	<i>t</i>
<b>FQOL</b>			
Degree of needs	-.08	-.13	-1.22
Parent ratings of Part C/EI services	.47	.37	3.37**
<b>ECO-recommended family outcomes</b>			
Degree of needs	-.15	-.13	-1.53
Parent ratings of Part C/EI services	1.55	.64	7.32**
<b>FQOL<sup>a</sup></b>			
Degree of needs	-.05	-.08	-0.73
Parent ratings of Part C/EI services	.13	.10	0.73
ECO-recommended family outcomes	.22	.42	3.04**

Note: ECO = early childhood outcomes; EI = early intervention; FQOL = family quality of life; FOS = Family Outcome Survey. FOS and FQOL scores were centered prior to analyses.

<sup>a</sup>Predictor variables were entered simultaneously in regression analysis.

\*\* $p < .01$ .

**Figure 2**  
**Mediator relationship between Part C/EI services, ECO-recommended family outcomes, and FQOL.**



Note: EI = early intervention; ECO = early childhood outcomes; FQOL = family quality of life. The dashed arrow between Part C/EI services and enhanced FQOL represents an indirect relationship. <sup>a</sup> $r = .36, p < .001$  represents the statistically significant relationship between Part C/EI services and FQOL when ECO-recommended family outcomes is not in the model. <sup>b</sup> $r = .36, p = .047$  represents the nonstatistically significant relationship between Part C/EI services and FQOL when ECO-recommended family outcomes are included in the model.



## Discussion

We examined relationships between Part C/EI services and family outcomes, specifically, the proposition that ECO-recommended family outcomes represent immediate results of EI services that lead to the more global outcome of enhanced FQOL. Although enhanced FQOL is generally considered an ultimate goal of EI, the relationship between Part C/EI services, immediate results of those services, and overall FQOL has not been empirically evaluated. We believe, however, that both the services provided to families and the intended immediate outcomes of those services should derive from the ultimate outcome of EI—that is, enhanced FQOL. Therefore, the relationships among Part C/EI services, ECO-recommended family outcomes, and FQOL should inform EI practice and accountability assessment.

Overall, results showed that the Part C/EI services families received met their needs somewhat or very well. This is consistent with prior research (Bailey et al., 2005; Hebbeler, Spiker, et al., 2007; Summers et al., 2007) showing that families are generally satisfied with EI services and perceive positive benefits from such services. Families in this study also reported generally high ECO-recommended family outcomes and FQOL. Although income and race/ethnicity were not significantly related to ECO-recommended family outcomes or FQOL, the sample included predominantly middle-income White families. This issue, therefore, merits further investigation. Prior research has also suggested that severity of disability is inversely related to FQOL (R. I. Brown, MacAdam-Crisp, Wang, & Iarocci, 2006; Wang et al., 2004). Although we did not measure severity of disability, we found no relationship between type of disability (e.g., developmental delay, speech-language impairment) and ECO-recommended outcomes or FQOL. We did, however, find a modest relationship between the degree of families' perceived needs and ECO-recommended family outcomes. Specifically, families with minimal perceived needs reported better ECO-recommended family outcomes than families with high perceived needs. Given that the majority of families' perceived needs were related to supporting their child's development (e.g., health services, speech-language therapy, physical and/or occupational therapy), increased perceived needs may be related to increased severity of disability.

The most important contribution this study makes is to provide evidence of a relationship between Part C/EI services with ECO-recommended family outcomes and FQOL. Supporting Bailey and colleagues' (2006) contention that attainment of the ECO-recommended family outcomes will enhance FQOL, our results showed a path relationship between parent ratings of Part C/EI services, ECO-recommended family outcomes, and FQOL. Consistent with our logic-model theory, our results suggest that the extent to which Part C/EI services met families' perceived needs influenced ECO-recommended outcomes that, in turn, influenced the broader outcome of FQOL. Considered from the perspective of prior research showing that EI services may not always meet family needs (I. Brown et al., 2003; Summers et al., 2007) or may have limited impact on broader family outcomes (Abbot et al., 2005; Hebbeler, Spiker, et al., 2007), our finding of a path relationship also suggests that if families' perceived needs are not met, immediate and broader family outcomes could be affected. This has implications for determination of families' needs in IFSP assessment and program planning. IDEA requires that families identify their concerns, priorities, and resources.

Findings from this study suggest that families' participation in identifying concerns, priorities, and resources may not be sufficient for promoting positive family outcomes. At a minimum, joint determination of needs and services by EI practitioners and families is needed. Further consideration of families as primary decision makers in determining needs and services is also warranted.

Although our findings support our logic-model theory that ECO-recommended family outcomes represent immediate outcomes of Part C/EI services and FQOL represents a broader family outcome, alternate hypotheses could explain these findings. Families with higher quality of life, for example, could perceive fewer needs, have greater outside support or resources, or expect less of the Part C/EI services they receive and, consequently, consider the services more successful at meeting their needs. It is also possible that families with higher quality of life are more likely to have better ECO-recommended family outcomes. Further research is needed to clarify these relationships and test our hypothesis of a path relationship between Part C/EI services, ECO-recommended family outcomes, and FQOL. Nonetheless, this study provides an important first step in establishing empirical evidence that these constructs are related.

Tying Part C/EI services to accountability outcomes for children *and* families reinforces the theoretical and empirical foundation of family-centered practice. It also offers the opportunity to evaluate the efficacy of Part C/EI services (Bailey et al., 2006). In assessing family outcomes, however, we agree with McWilliam (2010) that (a) "accountability outcomes should be tied to the actual outcomes we desire" (p. 204) and (b) that the services families receive should be determined by this actual outcome rather than the accountability outcomes. The actual desired outcome of EI is enhanced quality of life for families of infants and toddlers with disabilities (Bailey et al., 2006; Dunst & Bruder, 2002; McWilliam, 2010; Summers et al., 2007; A. P. Turnbull, Summers, Turnbull, et al., 2007). The ECO-recommended family outcomes are important immediate and accountability outcomes. As such, Part C/EI services and the ECO-recommended family outcomes should be related to and should advance the ultimate goal of improved FQOL. Findings from this study support these relationships.

While this study contributes to our understanding of the relationships between EI services and family outcomes, future research should be designed to test our logic-model theory as well as to examine how factors such as socioeconomic status, race/ethnicity, and severity of disability affect the relationships among Part C/EI services, ECO-recommended outcomes, and FQOL. Zuna, Turnbull, and Summers (2009) called for research examining supports (from informal system) and services (from formal system) necessary for enhancing FQOL as a "proactive approach to preventing lower [quality of life] in families" (p. 30). We similarly suggest that researchers examine how specific supports and services affect the relationship between immediate and broader family outcomes. Future research needed to clarify the relationships among supports and services, immediate outcomes, and long-term impacts on FQOL will require larger samples, more objective measures of the nature and adequacy of services received, and more objective measurement of the ECO-recommended outcomes. Finally, given the interrelatedness of family and child needs and outcomes (A. P. Turnbull, Turnbull, Erwin, Soodak, & Shogren, 2011), another important step in this line of research will be to establish a link between family and child outcomes.

## Limitations

Although we intentionally recruited participants who were representative of various geographic regions of the state, variability within our sample, and consequently generalizability, is limited by several factors. First, KDHE staff did not disclose the total number of invitations initially sent to families in the seven pilot sites. We cannot, therefore, present an overall return rate for the initially solicited study population. As a result, we cannot discount the possibility of nonresponse error. Second, the sample has limited representation of families from culturally and linguistically diverse backgrounds, particularly African American and Latino families. A third potential limitation is the predominance of respondents who were mothers. Consequently, the question of how fathers perceive Part C/EI services, family outcomes, and FQOL remains unclear. In previous studies using the FQOL Scale, however, researchers have found no statistical difference between mothers' and fathers' responses (Wang et al., 2006). Findings from our study are also limited to parents' perceptions of their family's needs, how well those needs were met by EI services, and outcomes of those services. Findings should be interpreted with caution because client and professional perceptions of need vary (Magi & Allander, 1981). Finally, consistent with the distribution of disability within the general population, our sample included a limited number of children with diagnoses typically requiring greater numbers or intensity of services. It is important to note that perceptions of need, service adequacy, family outcomes, and FQOL may vary as a function of type and severity of disability.

## Conclusion

Findings from our study provide initial evidence connecting Part C/EI services and family outcomes. Specifically, we found a path relationship between parents' perceptions of Part C/EI services, immediate outcomes of those services (i.e., ECO-recommended family outcomes), and longer term family outcomes (i.e., enhanced FQOL). Given that an ultimate outcome of EI is enhanced FQOL, this relationship is essential in determining appropriate accountability outcomes and measuring Part C/EI program efficacy. This study supports the ECO-recommended family outcomes as immediate and appropriate accountability outcomes of Part C/EI services. This study also reinforces the importance of the role of parents in identifying needs and individualized services to meet those needs to enhance immediate family outcomes and quality of life.

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