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Developmental and Behavioral Needs and Service Use for Young Children in Child Welfare

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ABSTRACT. *Objective.* **To determine the level of developmental and behavioral need in young children entering child welfare (CW), estimate early intervention services use, and examine variation in need and service use based on age and level of involvement with CW by using a national probability sample in the United States.**

Methods. **As part of the National Survey of Child and Adolescent Well-Being, data were collected on 2813 children <6 years old for whom possible abuse or neglect was investigated by CW agencies. Analyses used descriptive statistics to determine developmental and behavioral needs across 5 domains (cognition, behavior, communication, social, and adaptive functioning) and service use. Logistic regression was used to examine the relationship between independent variables (age, gender, race-ethnicity, maltreatment history, level of CW involvement, and developmental or behavior problems) and service use.**

Results. **Results indicate that age and level of CW involvement predict service use when controlling for need. Both toddlers (41.8%) and preschoolers (68.1%) in CW have high developmental and behavioral needs; however, few children are receiving services for these issues (22.7% overall). Children that remain with their biological parents have similar needs to those in out-of-home care but are less likely to use services. Children <3 years of age are least likely to use services.**

Conclusions. **Children referred to CW have high developmental and behavioral need regardless of the level of CW involvement. Both age and level of involvement influence service use when controlling for need. Mechanisms need to be developed to address disparities in access to intervention.** ***Pediatrics*** **2005;116:891–900;** ***child welfare, foster care, developmental services, developmental need, child abuse.***

ABBREVIATIONS. CW, child welfare; NSCAW, National Survey of Child and Adolescent Well-Being; K-BIT, Kaufman Brief Intelligence Test; BDI, Battelle Developmental Inventory; PLS-3, Preschool Language Scales-3; CBCL, Child Behavior Checklist; SSRS, Social Skills Rating Scale.

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Each year ~2.6 million referrals regarding 4.5 million children are made to child welfare (CW) agencies throughout the nation, and 1.8 million of those referrals are accepted for investigation.[1] Overall, at least 12.3 children in every 1000 have been victims of child abuse or neglect. The highest rates of abuse and neglect occur in children under the age of 6. In 2001, >30% of children in CW were between the ages of 0 and 5.[2] Because these same children are frequently seen in medical offices throughout the country, both before and after allegations of abuse are made, the medical, developmental, and behavioral issues that face them are important to pediatricians.

Although limited data exist, local studies suggest that this population of young children is at higher risk for developmental and behavioral problems than children who have not interacted with CW. This is particularly true for children in out-of-home care. Research on children placed in out-of-home care suggests that between 23% and 61% of children under the age of 5 are significantly delayed when screened for developmental problems.[3–6] This elevated rate, compared with a rate of 10% to 12% of those with developmental delays in the general population, may be a result of increased risk of prenatal exposure to maternal alcohol and drug abuse, abuse and neglect in their birth homes, or increased medical conditions such as complications from low birth weight or prematurity.[7–9] Studies examining behavior problems report that as many as 25% to 40% of children under the age of 6 who enter out-of-home care have significant behavioral issues.[4,5,10] This is much higher than the overall prevalence rate of behavioral issues in the general population of preschoolers, which has been estimated at between 3% and 6%.[11,12]

Greater attention has been focused on children in out-of-home care despite the fact that nearly 90% of children whose reports of abuse and neglect are serious enough to trigger an investigation will remain at home after the close of the investigation. Fewer than 1 in 3 of these children will continue to have an open CW case after the initial investigation. The limited amount of research available suggests that young children who are active in CW but remain

with their biological parent(s) also have significant developmental and behavioral issues.[13] For example, Leslie et al[6] examined rates of developmental delay for children placed at home with their biological parents and those placed out of home in either nonrelative foster care or kinship care; they found that children in all settings had similarly high rates of developmental delay.

Although the studies cited above provide an indication of the level of developmental and behavioral issues present among young children involved with CW services, there are gaps in this research. First, a comprehensive and representative evaluation of the developmental and behavioral needs of young children in CW, controlling for the level of CW involvement, has not been conducted to date. Second, the majority of published studies, by which caregivers choose to pursue additional evaluations, have used clinical data that may be biased. For example, in the Leslie et al[6] study, children who remained in out-of-home care were more likely to receive follow-up evaluations than those who were returned to their homes. These types of selection factors could lead to overestimates or underestimates of actual need in this population. Third, these studies only examined children immediately after contact with CW. Because of the stress associated with this period, many researchers have noted that this may not be an optimal time to examine a child's development. Thus, no large-scale study has systematically examined the development and behavioral status of children in CW as a function of the level of CW involvement or addressed some of the limitations of existing studies.

Understanding the scope of the developmental and behavioral needs of children in contact with the CW system is important for several reasons. First, developmental and behavioral services can lead to more favorable outcomes for children at risk for delays or dysfunction that are a result of biological or social risk factors.[14–16] In fact, intervening early in development can have a significant positive impact on later intelligence level, grade retention, use of special education services, and chronic delinquency.[17] Second, early intervention services designed to address both developmental and behavioral problems among young children are available throughout the United States through federal programs such as the Individuals With Disabilities Education Act, the Education for the Handicapped Amendment (Pub L No. 99-457), and the Early Periodic Screening Diagnosis Treatment under the Medicaid program. Finally, there is a paucity of research examining the use of early intervention and developmental services by young children in the CW system despite their heightened risk for early developmental problems.[18] The few studies available suggest that perhaps only the most severely impacted children are referred for an assessment[6] and that, even when identified as having need, more than half of young children in family foster care are not enrolled in any therapeutic programs.[19]

This study examines patterns of developmental and behavioral problems and corresponding service use among young children in a nationally representative sample of children in contact with US CW agencies as the result of allegations of abuse or neglect. We address 4 major questions: What proportion of children 0 to 5 years of age and in contact with CW are at risk for developmental and behavioral problems? What specific patterns of developmental and behavioral problems exist in this population? What percentage of children in this population receive early intervention services? How is service use related to both clinical and nonclinical factors such as race/ethnicity, age, and level of involvement with CW?

METHODS

The National Survey of Child and Adolescent Well-Being (NSCAW), the first national longitudinal study of its kind, aims to learn about the experiences of children and families involved with CW. NSCAW used a national probability sampling strategy to select a total of 100 counties representing county CW agencies. Counties were typically defined as geographic areas that encompass the population served by a single CW agency (usually 1 county and hereafter referred to as counties). The probability of county selection was proportional to the size of the county's CW service population. Of the 100 counties sampled for the study, the NSCAW study ultimately collected child-level data in 92 counties. Eight counties were excluded because regulations in those areas required that CW agency personnel obtain active consent from potential participants before contact by the NSCAW research team. Within participating counties, children coming into contact with CW were identified, and the child and his/her caregiver were invited to participate in the study. Approximately equal numbers of children were sampled in each county. The final sample of children was representative of the national population of children coming into contact with CW as a result of allegations of abuse or neglect.[20]

Approval for this study was given by the US Office of Management and Budget and the institutional review boards of the Research Triangle Institute, University of North Carolina, Children's Hospital in San Diego, and numerous state or county institutional review boards representing the counties involved with the study.

Sample

The NSCAW cohort included children from birth to 14 years of age at the time of sampling who had contact with CW during a 15-month period that began in October 1999. The target population for the NSCAW main sample component was all children who were subjects of child abuse and neglect investigations (or assessments) conducted by CW. The final sample included families of identified children who went on to have an active CW case, as well as families with cases that were not substantiated, and cases that were substantiated but whose families did not subsequently have an active CW case. The final sample included 5504 children, resulting in an overall weighted response rate of 64%. A complete description of the sampling plan can be found elsewhere.[21] Extensive analyses concluded that nonresponse bias was minimal and unlikely to be consequential for most analyses.[22] This report focused specifically on the 2813 children <6 years of age from the study sampling frame.

Procedures

After sampling, field representatives contacted caregivers and asked permission to interview them about the children in their care and to assess the child directly. Initial assessments were conducted an average of 5.3 months after onset of the CW investigation. A second interview with the caregiver was conducted an average of 13.2 months after onset of the CW investigation. Children included in this article were between 1 and 71 months of age at the time of the first interview. Of the children included, 641 (8.8%, weighted) were residing in out-of-home care, 1177 (23.0%, weighted) lived with their biological parents but had an open CW case, and 995 (68.2%, weighted) lived with a permanent caregiver (typically biological parent) and did not have an open CW case.

Measures

Sociodemographics

These variables consisted of the child's age, gender, and race/ethnicity and were obtained from CW agency workers and confirmed with field representatives and caregivers.

Level of CW Involvement

Level of involvement with CW at the time of the initial interview (at home with an open CW case, at home with no open CW case, or placed out of home) was obtained from the CW agency workers. Kinship foster care was included in the out-of-home category.

Maltreatment History

The type of alleged maltreatment children experienced that led to the current episode of involvement with the CW system was also obtained from CW agency workers. Workers were asked to identify the types of maltreatment that had been alleged by using a modified maltreatment-classification scale.[23] More than 1 type of maltreatment could be identified. Six dummy-coded variables regarding maltreatment history were created: (1) physical abuse; (2) sexual abuse; (3) emotional abuse; (4) supervisory neglect; (5) physical neglect; and (6) abandonment.

Risk for Developmental and/or Behavioral Problems

Several measures were used to estimate developmental and behavioral problems in young children and the need for early intervention services. Measures were obtained in 5 areas: (1) developmental/cognitive status; (2) language and communication level; (3) behavioral needs; (4) social skills; and (5) adaptive behavior. Standardized measures in each area were used to evaluate risk for developmental and behavioral problems and need for services. In general, serious risk was considered present when a child performed at least 2 standard deviations (SDs) below the mean on a specific measure. This amount of difference from the norm qualifies children for early intervention services in the majority of states in the United States (83%) and warrants a referral for additional evaluation in all states. Data were examined based on 3 levels of risk: no risk on any assessments (0); risk criteria met on 1 assessment (1); or risk criteria met on ≥2 assessments (2+). For the purposes of this study, developmental and behavioral issues were aggregated because early intervention programs typically serve children with any area of risk; these areas of delay/dysfunction often overlap in young children; and the service-delivery questions asked of caregivers were very general and did not ask about specific services.

Developmental/Cognitive Status

The measurement of developmental/cognitive status was conducted by using comprehensive screening assessments that varied with the age of the child. Children who were <4 years old (or >4 years old and received a score of 0 on the Kaufman Brief Intelligence Test[24] [K-BIT]) received the Battelle Developmental Inventory (BDI),[25] which was normed on 800 children. Test-retest reliability for this assessment ranges from .76 to .99, with most of the domains above .90. The BDI has good construct validity as well as concurrent validity with the Vineland Adaptive Behavior Scales.[26] The cognitive domain portion of the assessment was administered to children in this study. This domain is grouped into 4 subdomains including perceptual discrimination, memory, reasoning and academic skills, and conceptual development. The items are arranged in age categories, and information can be obtained by interview with the child's caregiver, observation in the natural environment, or structured assessments. A developmental quotient is obtained. Children were considered to be at serious risk for cognitive delay and in need of a referral to early intervention services if their overall cognitive score on this assessment was ≥2 SDs below the mean.

Children who were ≥4 years of age received the K-BIT,[24] which is a standardized assessment tool comprised of 2 subtests: vocabulary (expressive vocabulary and definitions) and matrices (ability to perceive relationships and complete analogies). This test was normed on >2000 individuals and has good internal reliability (.94 overall), test-retest reliability (.80–.96 for various domains), and concurrent validity. The domains correlate well with measures of full-scale IQ. Children were considered to be at serious risk for cognitive delay and in need of a referral to early intervention services if their overall score on this assessment was ≥2 SDs below the mean.

Language and Communication Level

To assess the possibility of language delay, the Preschool Language Scales-3 (PLS-3)[27] were used. This standardized assessment comprises 2 scales, expressive communication and auditory comprehension, and yields a total language score from those scales. Areas evaluated include sensory discrimination, logical thinking, grammar and vocabulary, memory and attention span, temporal/spatial relations, and self-image. Auditory-comprehension items include knowledge of body parts, following directions, comparing sizes, prepositions, and colors. The examiner can use direct testing as well as observation on this assessment. Test-retest reliability ranges from .82 to .94 depending on the domain. The scales discriminate language-disordered children 66% to 88% of the time and correlate well with other measures of communication skills. Children were considered to be at serious risk for language delay and in need of a referral to early intervention services if their overall score on this assessment was ≥2 SDs below the mean.

Behavioral Needs

The Child Behavior Checklist (CBCL)[28,29] was used to estimate emotional and behavioral problems. The CBCL is a widely used measure of behavior problems and social competence with established reliability and validity that has been standardized by age and gender on large populations from different socioeconomic backgrounds. Test-retest reliability ranges from .73 to .93. The CBCL has good discriminative validity in that the scores do not correlate with developmental test scores, and the problem items cluster into meaningful scales and correlate well with similar scales from other checklists. Two forms of the CBCL were used, one for children 2 to 3 years of age and another for children 4 to 18 years of age. The caregiver rated the child on behaviors by using a 3-point scale. Children were considered to be at serious risk for behavioral problems and in need of a referral to early intervention services if they scored ≥2 SDs above the mean on the internalizing, externalizing, or total problem scale of the CBCL. This is a more conservative measure than the "clinical range" of ≥64 that is defined in the manual, but it is consistent with the coding for the other assessments in the study.

Social Skills

Social skills were measured in children 3 to 5 years of age by using the Social Skills Rating Scale (SSRS).[30] This is a nationally standardized questionnaire that obtains information on the social behaviors of children from caregivers. The assessment has several scales including social skills, problem behaviors, and academic competence. It provides both standard scores and percentile ranks. The prosocial scale was used for this project. Children were considered to be at serious risk for social problems and in need of a referral to early intervention services if their standard score on the prosocial scale of this assessment was ≥2 SDs below the mean.

Adaptive Behavior

Adaptive behavior was measured using the Vineland Adaptive Behavior Scale screener,[26] a standardized measure used to assess the child's competence and independence in his or her daily living environment. This measure involves a semistructured interview with the child's caregiver, who provides examples of specific behavior to the interviewer. The daily living skills scale, which measures self-help skills and ability to complete activities of daily living in the natural environment, was administered to this population. Examples of questions include the ability to brush one's teeth, turn on the water faucet, remove a spoon from his or her mouth, etc. This measure was normed on a representative group of 563 children. Reliability has been high, between .87 and .98, and the scales correlate well with other measures of adaptive behavior. Children were considered in need of early intervention services if they scored in the "low" range as defined by the measure manual, which corresponds to >2 SDs below the mean.

Data Coding

Measures were categorized into 5 domains for analyses: developmental/cognitive status (as measured by the BDI or K-BIT); adaptive behavior (Vineland Adaptive Behavior Scales screener, self-help domain); behavior problems (CBCL); communication (PLS-3); and social skills (SSRS). The cognitive status domains

depended on 2 measures, because the K-BIT and BDI were given on the basis of the child's age. The behavior-domain information was available only for children 2 to 5 years of age, and the social-skills information was available only for children 3 to 5 years of age.

Service Use

Information regarding whether a child had received any services was obtained from interviews with current caregivers. Caregivers were asked many questions regarding the child's home life and services use; questions specifically relevant to early intervention services were used in the current analyses. Questions were coded into categories including (1) education services, (2) mental health services, and (3) primary care services. Education services included receipt of an individualized education plan (denoting eligibility and receipt of special education services) or an individual family service plan (denoting eligibility and receipt of early intervention services), receipt of special education services or classes, or attendance at a therapeutic nursery.# Mental health services included those received at a mental health or community health center,** in-home counseling (not including visits by case workers or isolated home visits by a case manager or other mental health clinician), or services provided by a private psychiatrist, psychologist, social worker, or psychiatric nurse for emotional, behavioral, learning, or attentional issues. Primary care services included visits to a medical doctor for emotional, behavioral, learning, or attention problems. (Questions regarding school counseling, residential or inpatient treatment, or day treatment programs were omitted because only 1 child in the sample received any of these services.)

This article focuses only on services that occurred within the 12-month period after contact with CW, although services may have begun before contact with CW. A 12-month period was chosen to provide adequate time for a child to receive an initial developmental screening (to be completed for children in out-of-home care within 30 days of becoming involved with CW as recommended by both the American Academy of Pediatrics and Child Welfare League of America guidelines),[31–33] obtain a referral to appropriate services, have eligibility for services determined (to be completed within 30–45 days of referral depending on the service provider as recommended under the Individuals With Disabilities Education Act),[34] and begin receiving services (to be initiated as soon as possible after eligibility is determined).[34]

Analyses

The major independent variables of interest in these analyses included level of CW involvement, age of the child, and number of risk areas. Patterns of risk and service use were examined as dependent variables by using each of these factors. Additional variables such as race/ethnicity and maltreatment history were also used as predictors based on their possible relationship to the primary independent variables.

Analyses primarily used descriptive statistics and logistic regression. χ^2 tests, correlation matrices, and tolerance tests were used to assess potential colinearity of the independent variables; logistic regression was used to examine univariate and multivariate relationships between independent variables and the dependent variable, early intervention service use. The analyses also examined the relationship between level of CW involvement and need through regression modeling.

The analyses took all features of the study design (case weights and clustering of observations) into account to obtain appropriate statistical estimates. Weighted analyses were performed by using SUDAAN 8.0 statistical software (Research Triangle Institute, Research Triangle Park, NC), which corrects SE estimates for weighted and clustered data. Additional detailed information about the NSCAW sample design and weight derivation is available from Cornell University, where the public-use data set is archived (www.ndacan.cornell.edu). All estimates reported in this article are generalizable to the ~1 million children <6 years of age for which a report of abuse or neglect was investigated.

#Therapeutic nursery is defined as a type of group therapy provided to young children with social/emotional/behavioral difficulties. Therapy tends to be for several hours per day in a classroom environment with specially trained teachers and health professionals.

** Mental health or community health center is defined as publicly funded and provides general health services.

RESULTS

Sample Characteristics

Table 1 presents information regarding children's age, gender, race/ethnicity, and maltreatment history stratified by level of CW involvement. Overall, it was estimated that the study target population consists of approximately equal percentages of very young (0–2 years old) and preschool (3–5 years old) children and equal percentages of boys and girls. The majority of children were white (46.8%) or black (28.5%). Most of the children experienced either physical (32.8%) or supervisory (42.5%) neglect. The breakdown according to level of CW involvement is listed in Table 1.

Significant differences were noted for those variables when stratified according to the level of CW involvement (Table 1); therefore, follow-up analyses were conducted to examine these differences. Children who remained at home were more likely to be older (3–5 years) than children who were removed from their homes (in-home, active case compared with out of home: $\chi^2 = 6.3$, $P < .05$; in-home, case not active compared with out of home: $\chi^2 = 9.0$, $P < .01$). Race/ethnicity was also related to level of CW involvement ($P < .01$). Additional analyses revealed that children remaining at home were more likely to be white than children removed from their homes (in-home, active case compared with out of home: $\chi^2 = 4.7$, $P < .05$; in-home, case not active compared with out of home: $\chi^2 = 5.3$, $P < .05$). Children remaining at home with an active CW case were less likely to be Hispanic than children removed from their homes ($\chi^2 = 4.4$; $P < .05$). Several differences by level of CW involvement were noted for maltreatment history. Children remaining in their home without an active CW case were more likely to have been referred to CW because of accusations of sexual abuse ($\chi^2 = 10.2$; $P < .01$). Children remaining at home were less likely to have been referred to CW because of accusations of supervisory neglect than children placed out of home (in-home, active case compared with out of home: $\chi^2 = 4.9$, $P < .05$; in-home, case not active compared with out of home: $\chi^2 = 7.2$, $P < .01$) or abandonment (in-home, active case compared with out of home: $\chi^2 = 7.2$, $P < .01$; in-home, case not active compared with out of home: $\chi^2 = 10.5$, $P < .01$).

Developmental and Behavioral Need

Results of the initial assessments were examined by age and level of CW involvement (Table 2). Overall, many children (45.7%) had scores in the areas of cognitive, behavioral, and social skills that would indicate eligibility for early intervention services. Levels of developmental and behavioral risk were high in most of the domains studied. In each domain, levels of risk were similar across the 3 levels of CW involvement. Important differences were noted, however, by age. Significantly more children in the 0- to 2-year-old age range failed the cognitive screening (30.6%) than children in the 3- to 5-year-old age

TABLE 1. Sociodemographic Characteristics and Maltreatment History of Children in CW According to Level of CW Involvement

	Level of CW Involvement			Total (N = 2813)	χ^2 P Value
	Out-of-Home Placement (N = 641)	In Home, Active CW Case (N = 1177)	In Home, No Active CW Case (N = 995)		
Age, % 3–5 y old (SE)	32.9 (7.6)	50.0 (2.8)	55.2 (2.6)	52.0 (2.1)	<.05
Gender, % male (SE)	46.6 (6.5)	55.2 (2.9)	51.2 (3.3)	51.8 (2.7)	NS
Race/ethnicity, % (SE)*					<.01
Black	31.2 (5.1)	33.5 (3.9)	26.4 (3.2)	28.5 (2.9)	
White	34.6 (4.7)	47.4 (4.2)	48.2 (4.5)	46.8 (3.8)	
Hispanic	27.0 (5.3)	14.5 (2.5)	20.1 (2.7)	19.4 (2.1)	
Other	7.3 (2.5)	4.7 (1.3)	5.4 (1.2)	5.4 (1.0)	
Maltreatment history, % (SE)†					
Physical	20.0 (4.0)	31.3 (2.5)	31.1 (2.2)	30.2 (1.7)	NS
Sexual	4.2 (1.3)	7.9 (2.2)	11.1 (1.7)	9.7 (1.3)	<.01
Emotional	8.4 (2.1)	11.5 (2.0)	8.2 (2.0)	9.0 (1.6)	NS
Physical neglect	38.0 (6.0)	37.2 (4.1)	30.7 (2.9)	32.8 (2.7)	NS
Supervise neglect	62.7 (5.3)	44.4 (3.1)	39.4 (3.6)	42.5 (2.6)	<.05
Abandonment	9.6 (2.2)	3.0 (0.7)	1.5 (0.6)	2.5 (0.5)	<.01
Number of US children represented in Sample, % (number of children)	8.79 (82 507)	23.03 (216 149)	68.18 (640 040)	100 (938 697)	

All percentages are weighted. NS indicates not significant.
* Categorical variable; P is the overall value for race ethnicity × level of CW involvement.
† Indicator variables coded as type of abuse present: Y/N

range (15.2%; $\chi^2 = 11.5$; $P < .001$). Fewer children had difficulty with adaptive behaviors; however, preschoolers (14.9%) were significantly more likely to have adaptive behavior risk than infants and toddlers (6.2%; $\chi^2 = 15.7$; $P < .001$). Behaviorally, ~25% to 30% of the children in both age groups scored in the risk range, making this the most common area of difficulty. Approximately 10% of the very young children (0–2 years old) had scores ≥2 SDs below the mean on communication assessments, compared with 16% of children 3 to 5 years of age; however, this difference was not significant. Eight percent of the children (3–5 years of age) who were assessed in the area of social skills showed significant risk.

To determine if clusters of children met eligibility criteria for services in the domains assessed, the number of domains in which children showed risk was examined. Sixty-one percent of younger children and 49% of older children had no domain in which their scores fell 2 SDs below the norm. Twenty-nine percent of younger children and 32.1% of preschoolers had developmental and/or behavioral risk in 1 area. Younger children tended to meet criteria on fewer assessments; however, these children did not

TABLE 2. Percentage of Children in CW With Significant Risk Across 5 Developmental Domains

Domain	Level of CW Involvement			Totals (N = 2813)
	Out of Home (N = 641), % (SE)	In Home, Active CW Case (N = 1177), % (SE)	In Home, No Active CW Case (N = 995), % (SE)	
Developmental/cognitive status*				
0–2 y	26.8 (4.3)	26.1 (2.9)	33.0 (4.2)	30.6 (3.1)†
3–5 y	13.6 (6.3)	10.0 (2.1)	17.0 (3.7)	15.2 (2.8)
Adaptive behavior‡				
0–2 y	10.1 (3.5)	6.0 (1.7)	5.5 (1.5)	6.2 (1.2)†
3–5 y	32.8 (6.3)	13.4 (3.6)	14.0 (2.7)	14.9 (2.1)
Behavioral needs§				
2 y	55.7 (20.1)	26.2 (5.1)	22.0 (5.5)	25.7 (4.7)
3–5 y	38.5 (5.0)	26.3 (4.5)	33.1 (4.0)	31.9 (2.9)
Language and communication level‖				
0–2 y	6.3 (2.0)	16.5 (3.4)	9.5 (2.8)	10.7 (1.9)
3–5 y	15.4 (8.8)	14.4 (3.9)	17.0 (3.7)	16.3 (2.6)
Social skills¶				
0–2 y				
3–5 y	8.4 (3.8)	7.4 (2.2)	8.4 (3.1)	8.2 (2.3)

All percentages are weighted.
* Assessments included in this battery were the BDI and Screening Test, cognitive skills section, for children <4 years old (or ≥4 years old if the child failed the K-BIT) and the K-BIT: expressive vocabulary definitions and matrices for children >4 years of age.
‡ The Vineland Adaptive Behavior Scales screener was used to assess adaptive behavior.
§ The CBCL 2-3 or CBCL 4-18 was used to assess behavioral issues. The CBCL is normed for children ≥2 years of age; therefore, children <2 years of age were not included in these analyses.
‖ The PLS-3 was used to assess language and communication skills.
¶ The SSRS was used to assess social deficits. The SSRS is normed for children ≥3 years of age; therefore, children <3 years of age were not included in these analyses.
† $P < .001$ for comparison of age groups within domains.

receive the social-skills assessment. Ten percent of infants and toddlers, and 19.4% of the preschool children had risk in ≥2 domains. When examined by level of CW involvement, no statistically significant differences were seen in the number of domains in which children had significant risk.

Current Service Use

We next examined service use for developmental and behavior problems in education, mental health, or primary care sectors (see Table 3). Fewer children used education, mental health, or primary care services than exhibited delays on the standardized assessments. Overall, ~22.7% of children received some type of developmental or behavioral services in the year after their initial contact date with CW. Services that children received were a blend of education, mental health, and primary care services, with education services being the most common.

Differences in service use were seen by level of CW involvement (Table 3), with children in out-of-home care being more likely to receive any type of services (35.6%) than children remaining in home who did not have an active CW case (19.9%; $\chi^2 = 10.1$; $P < .01$). When delineated by service type, children in out-of-home placements were more likely to receive primary care services than children remaining in home without an active CW case (Fig 1; $\chi^2 = 6.3$; $P \leq .01$). Differences were also noted by age; infants and toddlers were less likely than preschoolers to receive education services ($\chi^2 = 11.9$; $P < .001$), mental health services ($\chi^2 = 22.9$; $P < .001$), and primary care services ($\chi^2 = 9.8$; $P < .01$).

Predictors of Service Use

A multivariate analysis of the relationship between service use and age, CW involvement, race/ethnicity, and level of risk was conducted. Composite service use was the dependent variable (see Table 4). Children who had 1 area of developmental and behavioral risk were almost 3 times more likely to receive services than children without risk on those assessments, and children with ≥2 areas of risk were >5 times as likely to receive services ($P < .001$). However, nonclinical variables were also associated with service use. Holding other variables constant, younger children were approximately one third as likely to receive services than older children ($P < .001$). Gender did not predict service use. Race/ethnicity was associated with service use; inspection of the confidence intervals indicated that black children were about half as likely to receive services than white children. Follow-up analyses indicated that this difference was true at all levels of risk, although there was a trend toward a wider gap when children had ≥2 areas of risk. Maltreatment history predicted service use; children whose primary area of abuse was abandonment were 3 times more likely to receive services than children not identified as abandoned. Level of CW involvement also predicted service use; children living at home, regardless of whether they had an active CW case, were much less likely to receive services for developmental or behavioral problems than children living in out-of-home care. Comparison of the odds ratios and confidence intervals indicated that children at home without an active CW case were the least likely to receive services.

Figure 1 summarizes overall rates of developmental and behavioral service use by young children in the year after contact with CW, classified by age, level of CW involvement, and number of domains in which significant risk was present, 3 of the key independent variables. The figure clearly shows the relationship between age and service use (older children are more likely to receive services than younger children), level of CW involvement (children in out-of-home care receive services more often than children remaining at home), and level of risk, with an increase in service use as the number of risk domains increases.

TABLE 3. Service Utilization Rates for Children in CW Reported by Caregiver According to Level of CW Involvement

Caregiver Report	Out of Home ($N = 641$), % SE	In Home, Active CW Case ($N = 1177$), % SE	In Home, No Active CW Case ($N = 995$), % SE	Totals ($N = 2813$)
Any service use				
Total	35.6 (3.6)	25.8 (3.3)	19.9 (2.1)	22.7 (1.6)
0–2 y	25.6 (4.0)	17.7 (2.9)	8.7 (2.0)	12.9 (1.7)
3–5 y	56.1 (6.2)	33.9 (5.8)	29.1 (3.0)	31.6 (2.5)
Educational services				
Total	21.1 (3.9)	12.4 (2.1)	10.4 (1.7)	11.8 (1.3)
0–2 y	13.3 (3.6)	8.5 (2.0)	5.2 (1.8)	7.0 (1.4)
3–5 y	37.0 (5.8)	16.3 (3.8)	14.7 (2.6)	16.3 (2.2)
Mental health services				
Total	15.7 (3.0)	15.3 (2.8)	9.6 (1.4)	11.5 (1.3)
0–2 y	9.1 (1.9)	8.0 (2.5)	2.9 (1.2)	4.9 (1.2)
3–5 y	29.2 (10.8)	22.6 (4.7)	15.0 (2.3)	17.5 (2.1)
Primary care services				
Total	18.1 (3.5)	9.7 (2.2)	5.9 (1.3)	7.8 (1.0)
0–2 y	15.7 (3.6)	4.1 (1.0)	3.0 (1.0)	4.8 (0.9)
3–5 y	23.1 (8.0)	15.2 (3.9)	8.2 (2.1)	10.6 (1.7)

All percentages are weighted; significance values are reported in the text.

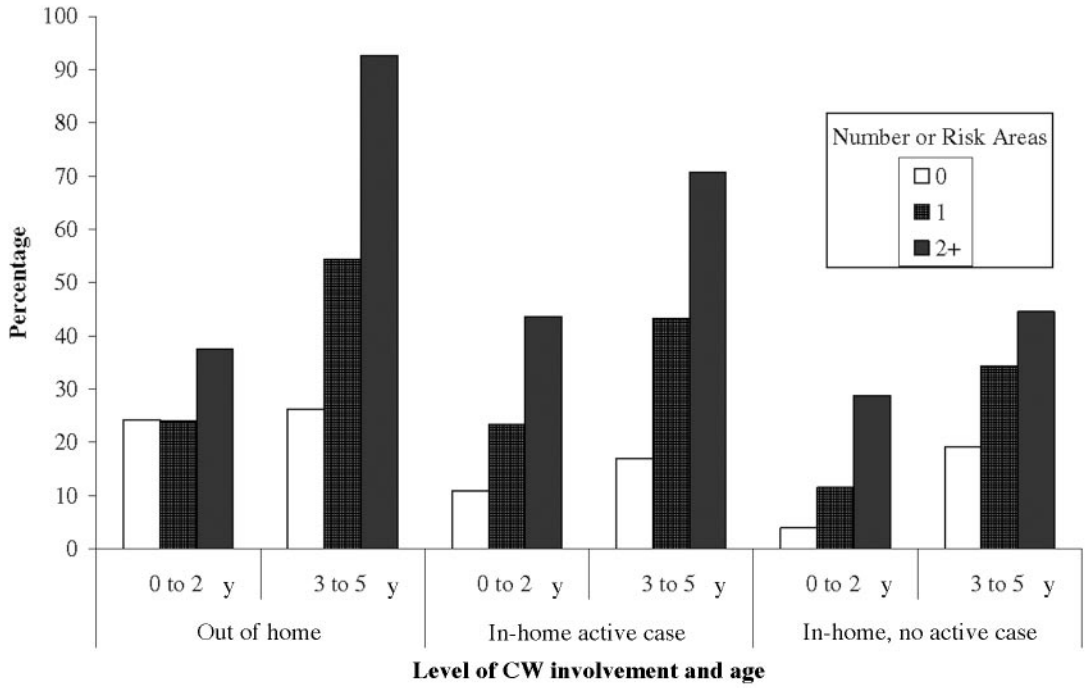

Fig 1. Percentage of children investigated by CW reported to be receiving any services. Service use is based on caregiver report and is depicted by areas of risk and level of involvement in CW.

TABLE 4. Logistic-Regression Analysis of Any Service Use (Educational, Mental Health, or Primary Care) According to Model Variables (N = 2813)

	β Coefficient	SE	Odds Ratio (95% Confidence Interval)	P
Developmental and behavioral need (ref = no risk)				.0001
1 risk score	1.02	0.32	2.76 (1.47, 5.19)	
≥2 risk scores	1.64	0.36	5.18 (2.54,10.58)	
Age (ref = 3–5 y)				.0000
0–2 y	−1.10	0.20	0.33 (0.22, 0.50)	
Gender (ref = female)				.7513
Male	−.09	0.28	0.91 (0.52, 1.60)	
Race ethnicity (ref = white/non-Hispanic)				.0173
Black/non-Hispanic	−.82	0.29	0.44 (0.25, 0.79)	
Hispanic	−.27	0.41	0.76 (0.33, 1.74)	
Maltreatment history (ref = no)				
Physical abuse (yes/no)	−.19	0.28	0.83 (0.48, 1.43)	.4963
Sexual abuse (yes/no)	−.37	0.49	0.69 (0.26, 1.84)	.4538
Emotional abuse (yes/no)	−.19	0.35	0.83 (0.41, 1.67)	.5959
Physical neglect (yes/no)	−.21	0.22	0.81 (0.52, 1.26)	.3418
Supervisory neglect (yes/no)	−.46	0.25	0.63 (0.38, 1.03)	.0676
Abandonment (yes/no)	1.07	0.40	2.92 (1.32, 6.45)	.0088
Level of CW involvement (ref = out of home)				
In home, not active	−1.13	0.30	0.32 (0.18, 0.58)	
In home, active	−.51	0.24	0.60 (0.38, 0.96)	

DISCUSSION

Children coming into contact with CW agencies frequently have circumstances that place them at increased risk for poor developmental trajectories. The findings from this nationally representative study provide a relatively comprehensive picture of the developmental and behavioral problems experienced by young children in contact with CW. Across age groups, approximately half of young children in CW had developmental or behavioral problems that likely would qualify them for early intervention services. Specifically, ~40% of infants and toddlers (0–2 years old) and 50% of preschoolers in our sample exhibited serious developmental and/or behavioral risk, with behavioral problems being the most common area of concern. Although most of the children had need focused in 1 domain, 10% of toddlers and 20% of preschoolers showed significant risk in >1 domain. The very slight differences in the number of children who showed significant developmental and behavioral problems across the 3 levels of CW involvement call for greater investment in providing developmental and behavioral services for those children who are not involved in ongoing CW services.

This study was also able to investigate service use. Over the course of 1 year, slightly less than one quarter (22.7%) of young children in contact with

CW received any developmental or behavioral intervention from the education, mental health, or primary care sectors. Differences were seen by age; only 12.9% of infants and toddlers and 31.6% of preschoolers received services during that period. This rate of service use is substantially less than the rate of risk, although the definition of risk used in these analyses was quite conservative. Children were most likely to receive education services and least likely to receive primary care services for developmental and behavioral issues. This may be due to the fact that, in the case of early intervention, education services consist of a wide range of programs that may include counseling, diagnostics, language therapy, education, and other services and are more available to this age group.

Multivariate analyses shed light on which children in CW obtained developmental or behavioral services. Although service use was low overall, level of risk was appropriately and strongly associated with service use. Children in both age groups were more likely to receive services if they had ≥2 areas of risk than if they did not have risk in any behavioral or developmental domain. It is important to note that younger children did not receive services as often as preschoolers, although they exhibited similar levels of risk. This may lead to increased developmental and behavioral needs later and may limit the amount of remediation that can be attained if intervention is delayed.[17,35] The reason for this age discrepancy may be that risk factors are more difficult to identify at younger ages, that there is a hope that children will "grow out of" these problems, or that there are greater barriers to obtaining services for infants and toddlers. Level of CW involvement also affected service use; >90% of preschoolers with ≥2 risk factors in out-of-home care were receiving services, whereas less than half of preschool children at high risk remaining in their home without an active case were receiving services. Finally, although the reasons that such differences arise were not studied, the observed racial/ethnic differences in service use confirm previous findings that black children were less likely to receive services than white children even after controlling for level of need.

The results of the current study are consistent with Children Family Service reviews conducted by the federal government. These reviews indicated that a majority of state CW programs did not meet current federal education (68%) and mental health (98%) service provision standards.[36] According to our data, CW programs do seem to facilitate moving preschool children with high need into services once they enter foster care. However, many younger children placed in out-of-home care, and all young children remaining at home, are much less likely to receive services even in the presence of need. New federal regulations requiring the development of referral procedures from CW to early intervention for very young children with substantiated cases of abuse or neglect provide a critical opportunity to improve provision of services in the future.[37]

The findings from this research have a number of important implications. First and foremost, the level of deficits observed among children in this population is substantial and warrants serious attention from clinicians, CW, and early intervention systems specifically and policy makers more broadly. At 2 SDs below the mean, the severity of problems observed among many young children in contact with CW extends beyond delay and into impairment. These deficits are more concerning because of their presence during a foundational developmental period, just before entry into school, when social and emotional problems can translate into escalating peer and academic difficulties. Although it is known that early developmental impairments are not a certain marker of later functional difficulties, special concern is warranted for this population of children.[17] Contact with CW should be seen as a signal that other compensatory or protective factors are likely not to be in place in many families, suggesting that identified problems are likely in many cases not to improve substantially without intervention.

Special attention should be given to differences in rates of service use among children with differing levels of CW involvement. The vast majority of children who come into contact with CW remain at home, some with basic CW services and many others with no services at all after investigation. Serious developmental and behavioral problems are as frequent among these children as among children removed from their homes, but early intervention service use is much less common among children remaining at home, which may be because of lack of identification, limited referrals for services, family financial and emotional resources, or parental resistance.[34] Whatever the reasons, increased focus on children remaining in their homes after contact with CW is particularly warranted because of the small proportion of child abuse reports that will result in a placement into out-of-home care or even an open case.

From a societal perspective, contact with CW represents an opportunity to identify children who are likely to be at substantial risk for poor long-term developmental trajectories. Those in CW and early intervention service systems should consider how to facilitate increased access to early intervention services. This may be particularly challenging, but it is especially important for the large numbers of children who remain at home and do not have a CW case formally opened.

Limitations and Future Research

Although our study examines a representative sample of children in CW, several limitations should be noted. Service use was reported by the child's caregiver, and no independent assessment of the use of education, mental health, or primary care services was provided. Therefore, it is possible that caregivers over- or underreported the use of various services for the children in their care. However, previous research using similar measures has indicated relatively good agreement between caregiver report and actual mental health and education services received.[38,39] Because reasons for the low level of service use cannot be assessed by these data, it is pos-

sible that children remaining at home were referred for services and that their parents did not access those services.

This study represents a significant improvement over prior research. First, the sample was a nationally representative sample of children referred to CW agencies in the United States. Second, children were typically tested 5 months after contact with the CW system, and thus the immediate upheaval of changing placements or having the investigation take place was much less likely to affect scores on the standardized measures that we used.[6,10] Clearly, even after young children acclimated to a new foster care setting, or some time after the investigation for children remaining in their homes, many children continued to exhibit developmental and behavioral risks. Third, this study was able to examine children across 3 levels of CW involvement: (1) in home without an active CW case, (2) in home with an active CW case, and (3) placed out of home. Future research should examine barriers to identification of developmental and behavioral issues, difficulties with service access, and methods of facilitating appropriate intervention. Mechanisms for identification and service delivery for a population of children at high risk for poverty, placement changes, and medical home changes are necessary. Prevention programs that may assist these children before behavioral and developmental issues arise would also be a fruitful area of future study.

This article substantially expands our knowledge base regarding the developmental and behavioral needs and subsequent service use of young children in the CW system. It confirms a high rate of risk for developmental and behavioral difficulties and suggests that current policies and procedures heavily favor children in out-of-home care. Actively pursuing needed services for children remaining at home may prevent future need for CW, education, and mental health services.

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EVALUATIONS: ARE REPORT CARDS FOR DOCTORS A GOOD OR BAD IDEA?

"Issuing 'report cards' to evaluate doctors who perform angioplasty, the surgical reconstruction of a blood vessel to improve blood flow, may have unintended results, researchers have found.

It is widely believed that such evaluations give consumers an accurate measure of a doctor's skill. The research, however, suggested that the evaluations might cause doctors to avoid operating on the sickest patients in order to improve their scores.

Researchers looked at results of more than 80,000 angioplasty procedures in 34 hospitals in New York, which requires hospitals to report the outcomes of surgical procedures, and in 8 hospitals in Michigan, which does not.

The results were published in the June 7 issue of The Journal of the American College of Cardiology.

The patients in Michigan who had angioplasty had higher rates of heart attack, a higher prevalence of congestive heart failure and a higher rate of shock resulting from a sudden decrease in blood flow from the heart than those who had the procedure in New York.

The New York patients had a lower mortality rate, but the authors concluded that this was primarily because they were healthier to begin with. In other words, doctors in New York tended to avoid hard cases.

Dr. Mauro Moscucci, the lead author, said public reporting could be useful—if done properly. New York uses a system that takes account of how sick patients are, he said, and that works well when considering many cases. But he said the system might be biased when applied to a few cases of individual doctors who had high-risk patients. He said public reporting 'might have an unintended negative effect resulting in denial of care to high-risk patients' or those who might benefit most from angioplasty."

Bakalar N. *New York Times*. June 14, 2005

Noted by JFL, MD

Developmental and Behavioral Needs and Service Use for Young Children in Child Welfare

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