

Predicting Service Utilization with the Child and Adolescent Functional Assessment Scale in a Sample of Youths with Serious Emotional Disturbance Served by Center for Mental Health Services–Funded Demonstrations

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Abstract

This study investigated level of restrictiveness of living arrangements and number of days in out-of-family care at six months postintake, based on the Child and Adolescent Functional Assessment Scale (CAFAS), the Child Behavior Checklist (CBCL), gender, age, and level of family income at intake. It was composed of youths who met the criteria for serious emotional disturbance (SED) and were for the most part living in families that are described as socioeconomically disadvantaged. A multinomial logit model was used in the analysis of level of restrictiveness of living arrangements, and an ordinary least squares (OLS) regression model was conducted on number of days in out-of-family care. The CAFAS score at intake was found to be a significant predictor of service utilization between intake and six months and was a more consistent predictor than the CBCL. Results suggest that the CAFAS can be used to match service needs with resource allocation and to monitor performance-based outcome indicators.

Information that assists in predicting subsequent need for services is important to any agency providing services. It is critical for estimating cost of services, which is essential when contracting with state administrators or other entities to provide services to youths meeting eligibility criteria. It is also helpful for program planning (i.e., the type and amount of specific resources needed to meet the needs of the youths being served). At the front end, this information is useful in efficiently managing limited resources (i.e., assigning cases to specific programs or array of services at admission).

The Child and Adolescent Functional Assessment Scale (CAFAS) was designed to assess degree of impairment in youths with emotional, behavioral, psychiatric, psychological, or substance use problems.¹ The CAFAS at intake has been shown to be a predictor of subsequent service utilization and costs in the Fort Bragg Evaluation Project (FBEP).^{2,3} The youths in this study were primarily living in two-parent families of middle income and were dependents of army personnel who were on

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active duty or retired.⁴ The CAFAS total score at intake significantly predicted service utilization and cost at 6 and 12 months postintake in the FBEP.³ Higher impairment on the CAFAS at intake was significantly related to more restrictive care, higher cost, more bed days, and more days of services. Furthermore, the predictive power of the CAFAS was compared to presence of a variety of common diagnoses for children and to numerous measures. The CAFAS total score was a significant predictor of all four utilization indicators at both 6 and 12 months. In contrast, the number of problems endorsed on the Child Behavior Checklist (CBCL)⁵ was not predictive of any of the utilization indicators. The CAFAS at intake was the strongest predictor of subsequent utilization and cost, even when compared to psychiatric diagnoses.³

While the findings from the study of Hodges and Wong³ demonstrated that the CAFAS instrument is a better predictor of subsequent service utilization and cost than other psychiatric measures, the results were predicted on a single sample (FBEP). This article examines the predictive utility of the CAFAS by employing a sample whose characteristics are more diverse in terms of sociodemographic background of the youths and whose impairment in functioning is more severe.⁶ To meet this goal, this study utilized the data collected in the national evaluation of the demonstrations funded by the Comprehensive Community Mental Health Services for Children and Their Families: System of Care Initiative. The Child, Adolescent, and Family Branch administers this initiative for the Center for Mental Health Services (CMHS) within the Substance Abuse and Mental Health Services administration. The intent of these initiatives is to assist communities in developing systems of care for providing appropriate and accessible care to these families.

The national evaluation funded by CMHS is being conducted by Macro International, Inc., in collaboration with partners at the University of South Florida and the Federation of Families for Children's Mental Health. The youths included in this CMHS sample met criteria for serious emotional disturbance (SED),⁷ and the majority of the families were single caregiver families who live below the poverty level. In this national evaluation, data were collected at intake, 6 months, 12 months, and annually thereafter while children and families actively received mental health services.

The purpose of this study is to examine the relationships of the CAFAS scores at intake with subsequent service utilization patterns for youths reported on in the CMHS national sample. This study also examines the utility of the CAFAS in predicting subsequent service utilization compared to the CBCL.⁵ The postintake service utilization is measured by the restrictiveness of the youth's residential setting and number of days in out-of-family care during the six months after intake. It is expected that more impaired youths at intake will live in more restrictive settings and will spend more days in out-of-family care in the six months postintake than will their less-impaired counterparts.

Method

Measurement

The measures described here are part of a larger battery that is described in Stroul, McCormack, and Zaro.⁸ The variables of interest in this article include restrictiveness of living arrangement, days in out-of-family care, the CAFAS, the CBCL, and three sociodemographic variables (i.e., gender, age, and family income level).

LEVELS OF RESTRICTIVENESS OF CARE

Restrictiveness of living arrangement was derived from the youth's scores on the Restrictiveness of Living Environments Scale (ROLES).⁹ The ROLES consists of 25 categories that are given a rating ranging from 0 to 10. The ratings are based on research in which professionals rated each residential environment. A higher score indicates more restrictiveness. Caregivers were asked about the youth's placements for the time period between intake and six months postintake. Information on up to 12 possible placements was collected. A variable was generated for the highest level of restrictive-

ness collapsing across all placements for the youth. Professionals working with youths typically have to place a priority on keeping the youth and others around the youth free from harm or reasonable risk of harm. Accordingly, any placement in a restrictive setting indicates the presence of concern about the youth's functioning and possible risks involved.

The variable generated for most restrictive level of care consisted of three categories that were coded as follows: (1) family, (2) intermediate care, and (3) residential unit. The family category included youths who were able to live in a family environment without special accommodations due to their emotional or behavioral problems. This category included living with biological mother and/or father, adoptive home, home of a relative, home of a family friend, supervised independent living, regular foster care, and school dormitory (i.e., ROLES scores of 2.0 through 4.0). Regular foster care was included in this category because placement with a surrogate family is typically justified by impairment in functioning by the parent, not the child. The family category was the least restrictive level. The second most restrictive living environment, referred to as intermediate care, included specialized foster care, therapeutic foster care, individualized home emergency shelter, group home, job core/vocational center, and group emergency shelter (i.e., ROLES scores 4.5 through 6.0). Youths in this intermediate level of restrictiveness were able to be in the community at large; however, their placements were more supervised than a typical family environment and/or more expertise in managing these youths was needed than is present in a typical family environment.

The most restrictive level, referred to as residential unit, included residential treatment center (RTC), inpatient psychiatric, drug/alcohol rehabilitation center, youth correctional center, and juvenile detention center (ROLES scores of 6.5 through 9.0). These youths were in highly supervised settings, were not able to be in the community at large, and/or their care was managed by professionals.

DAYS IN OUT-OF-FAMILY CARE

Number of days spent in each placement between intake and six months postintake was collected for each of the 12 possible placements that could be entered for a youth. This variable was the sum of days spent in living situations outside of the home or a surrogate home. This variable included all placements referred to above as intermediate care and residential unit.

CAFAS

The eight CAFAS subscales that assess the youths were used in this study.¹⁰ They are as follows: School/Work (i.e., functions satisfactorily in a group educational environment), Home (i.e., observes reasonable rules and performs age-appropriate tasks), Community (i.e., respects the rights of others and their property such that they act lawfully), Behavior Toward Self and Others (i.e., appropriateness of youth's daily behavior), Moods/Emotions (i.e., modulation of the youth's emotional life), Self-Harmful Behavior (i.e., extent to which the youth can cope without resorting to self-harmful behavior or verbalizations), Substance Use (i.e., youth's substance use and the extent to which it is inappropriate and disruptive), and Thinking (i.e., ability of youth to use rational thought processes).

The CAFAS is essentially a menu of behavioral items from which the rater chooses those that describe the youth's most severe functioning in a specified time period. In this study, the last 90 days was the time reference. For each scale, the items are grouped by four levels of severity, which are as follows: severe (severe disruption or incapacitation), moderate (persistent disruption or major occasional disruption of functioning), mild (significant problems or distress), and minimal or no impairment (no disruption of functioning). The scores associated with the levels are 30, 20, 10, and 0, respectively. Scores are generated for each of the eight scales, and a total CAFAS score is generated by summing the eight scales. The range for the total score is 0 to 240, scored in the direction of higher scores indicating greater impairment. This total score, based on summing the eight scales for the youth, was used in the present analyses. Psychometric information on the CAFAS is available in

Hodges;^{11, 12} Hodges and Wong;^{2, 3} Hodges, Wong, and Latessa;⁶ and Hodges, Doucette-Gates, and Liao.¹³

Each site was responsible for conducting its own training for all CAFAS raters. All sites were required to budget two full-time equivalent positions to conduct the various research activities. These research evaluators were provided a one-day training on the CAFAS, in which the CAFAS Self-Training Manual¹⁰ was used. It provides detailed instructions on how to rate the CAFAS, example demonstration vignettes, and a set of vignettes to use for assessing interrater reliability. Each of the evaluators received feedback on his or her reliability. At the individual sites, the evaluators were responsible for how training was conducted and whether the requirement that raters be trained to reliability was followed.

CBCL

The CBCL⁵ was completed by a caregiver. The child is rated on 118 problem items using a three-point scale for how true the item is for the child over the last six months. The T score (total problem score) for the CBCL was used in the present analyses. A higher score indicates more symptoms.

SOCIODEMOGRAPHIC VARIABLES

Gender, age, and family income level of the youth are included as control variables. Gender is coded 1 if male, 0 if female. Age is dichotomized into adolescent (age 13 and older) and preadolescent (age 12 and younger). This grouped age variable is coded 1 if the youth is adolescent and 0 if preadolescent. In the data collection phase, the gross family income variable had nine response categories (i.e., <5,000, 5,000 to 9,999, 10,000 to 14,999, 15,000 to 24,999, etc.). For the purposes of this study, \$15,000 was used as a poverty threshold.¹⁴ Family income variable is coded 1 if the income is above the poverty line (annual income being at least \$15,000) and 0 if below the poverty line (annual income being less than \$15,000).

Sample Characteristics

The sample included all youths who were in the national sample and for whom data were available on the variables of interest in this study at the time of data analysis.* For the analyses of levels of restrictiveness, 1,629 cases were obtained that had no missing data for the variables of interest. For the analyses of days of out-of-family care, the sample was restricted to 797 cases of the sample that had data for days of out-of-family care.

Table 1 provides a description of the two samples for the variables of interest in this study. In the sample for the study of restrictiveness level, 78.1% of the youths were in the family category; 5.6% in intermediate care; and 16.3% in residential unit care. In the sample selected for the study of days in out-of-home care, on average the youths spent 59.7 days in out-of-home care after intake. This sample, in comparison to the sample for the study of restrictiveness level, has a greater proportion of the youths in intermediate care (9.4%) and in the residential unit care (30.7%). For both samples, the mean score on the CAFAS indicated moderate to marked impairment,^{2, 12} and the mean CBCL score was in the borderline clinical range of 67-70.⁵ In both samples, about two-thirds were male. In terms of age, the youths in both samples were almost evenly split between preadolescents and adolescents. With respect to family income, more than 40% of the families lived above the poverty line. The sources of referral were diverse and included a variety of service agencies, including mental health (23%), school (22%), social services (17%), corrections or court (12%), parent (9%), and other (17%). The majority of the female caregivers (58%) were single parents.

*The sites forward data to Macro, Inc., periodically, where it is cleaned and added to the existing data set. Rates of collecting and reporting data by the sites vary, mostly due to timing in implementing a system of care in the specific setting. Data collection is still continuing in some of the 26 sites contributing to this data set.

Table 1
Variables and Characteristics of Samples Employed for the Analysis of
Levels of Restrictiveness and Days in Out-of-Home Care

	For the Analysis of Levels of Restrictiveness	For the Analysis of Days in Out-of-Home Care
Sample size	1,629	797
Dependent variables		
Level of restrictiveness		
Percentage in category of family (reference group)	78.1	59.8
Percentage in category of intermediate care	5.6	9.4
Percentage in category of residential unit	16.3	30.7
Days in out-of-home care (mean and standard deviation)	—	59.7 (70.9)
Independent variables		
CAFAS: mean and standard deviation for eight scale sum	91.1 (44.5)	100.1 (45.1)
CBCL: mean and standard deviation	69.0 (10.3)	69.1 (9.9)
Gender (% of male)	66.9	66.3
Age group (% age 13+)	45.5	51.0
Family income (% above poverty)	40.4	43.5

NOTE: CAFAS = Child and Adolescent Functional Assessment Scale, CBCL = Child Behavior Checklist. Standard deviations for continuous variables are in parentheses.

Analytic Strategies

This study set up statistical models considering level of restrictiveness of living arrangements and number of days in out-of-family care as two separate dependent variables. Each of these dependent variables was regressed on the CAFAS total score for youth, the CBCL total problem score, gender, categorized age groups (adolescent and preadolescent), and categorized family income level (above poverty and below poverty). For the level of restrictiveness of care arrangements with three distinctive categories, the multinomial logit model was employed to investigate how the odds of being in intermediate care and the odds of being in a residential unit as opposed to being in family care would differ according to various independent variables. To illustrate the major findings, the multinomial logit model coefficients and a figure that shows the relationship between the CAFAS and the most restrictive living arrangement the youth experienced during the six months postintake are presented. For the days in out-of-family care variable, an ordinary least squares (OLS) regression model was employed because this variable was measured as a continuous variable. For the multinomial logit analysis, the STATA¹⁵ statistical package was used, and for the OLS regression, SPSS was used.¹⁶

For the two different dependent variables, a parallel approach was applied. First, the relationship of selected sociodemographic variables with the dependent variables was examined to determine whether the sample shows reasonable patterns of age, gender, and family income differentials in service utilization. Then, the model with sociodemographic variables only was expanded to include the CAFAS and the CBCL, respectively. These two models provide a statistical basis to investigate the effect of the CAFAS and the CBCL given the sociodemographic variables. Last, the model was

expanded by the inclusion of both the CAFAS and the CBCL together into the model of sociodemographic variables. This model was tested to examine the net effect of CAFAS on the dependent variables given the CBCL as well as other sociodemographic variables. Alternatively, this model can be used to examine the net effect of the CBCL given the CAFAS as well as other sociodemographic variables. The report of statistical analysis will focus on the changes in the coefficient of the CAFAS and CBCL across different models since the current study aims to examine whether the CAFAS and/or the CBCL would be significant after taking into account the selected sociodemographic variables.

Results

Level of Restrictiveness of Care

Table 2 presents the results from the multinomial logit model analysis of level of restrictiveness of care, in which the logit in this particular model refers to the log-odds of being in intermediate care versus being in a family and the log-odds of being in a residential unit versus being in a family. In each model in Table 2, the first column (I vs. F) indicates the coefficients of given variables in relation to the log-odds of being in intermediate care versus being in a family; the second column (R vs. F) indicates the coefficient of given variables in relation to the log-odds of being in a residential unit versus being in a family. These coefficients represent the effects of given independent variables on the likelihood of being in intermediate care rather than being in family care (I vs. F) and on the likelihood of being in a residential unit rather than being in a family (R vs. F).

Model 1 in Table 2 shows the relationship of gender, age, and family income with level of restrictiveness of care. According to Model 1, the likelihood of being in intermediate care (vs. being in a family) is not significantly different between males and females, while the likelihood of being in a residential unit (vs. being in a family) is significantly higher for males than for females. In terms of age groups, both the likelihood of being in intermediate care (vs. being in a family) and the likelihood of being in a residential unit (vs. being in a family) are significantly higher for adolescents than for preadolescents. Also, these likelihoods are significantly greater for youths whose family income is above the poverty line than for youths whose family income is below the poverty line.

Model 2-a expands Model 1 by adding CAFAS total score to test the relationship of CAFAS total score with the likelihood of being in a residential unit (vs. being in a family) and the likelihood of being in intermediate care (vs. being in a family) given the sociodemographic variables for gender, age, and family income. According to Model 2-a, after controlling for gender, age, and family income, the youths with higher CAFAS total scores are more likely than the youths with lower CAFAS total scores to be in intermediate care or in a residential unit (compared to being in a family). To examine the relationship of CBCL total problem score with the likelihood of being in a residential unit (vs. being in a family) and the likelihood of being in intermediate care (vs. being in a family) given the sociodemographic variables, Model 2-b expanded Model 1 through inclusion of CBCL total problem score. Model 2-b reveals that after controlling for gender, age, and family income, the CBCL total problem score does not have a significant relationship with the likelihood of being in intermediate care (vs. being in a family), while it has a significant positive relationship with the likelihood of being in a residential unit (vs. being in a family).

Model 3 expands Model 2-a by adding CBCL total problem score (or, alternatively, expands Model 2-b by adding the CAFAS total score). According to Model 3, when the CAFAS total score and the CBCL total problem score are taken into consideration together, the CAFAS continues to have a significant relationship with the likelihood of being in intermediate care (vs. being in a family) and with the likelihood of being in a residential unit (vs. being in a family). This means that regardless of CBCL total problem score, the likelihood of being in a residential unit (vs. being in a family) and the likelihood of being in intermediate care (vs. being in a family) is greater for youths

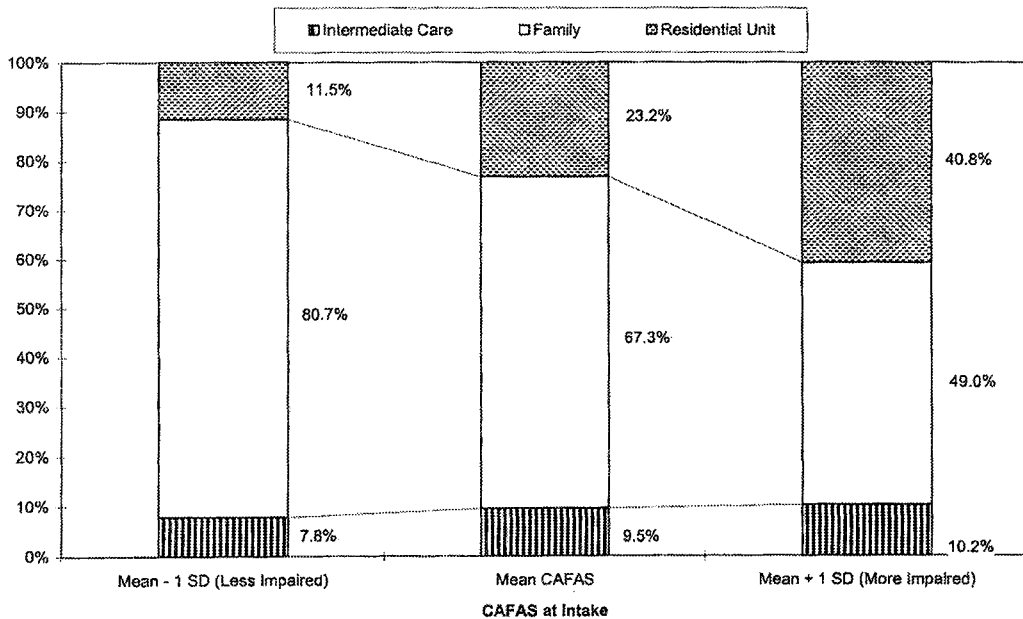
Table 2
Multinomial Logit Model Analysis of Most Restrictive Level of Care

	Multinomial Logit Models											
	Model 1			Model 2-a			Model 2-b			Model 3		
	I versus F Coefficient	R versus F Coefficient	I versus F Coefficient	R versus F Coefficient	I versus F Coefficient	R versus F Coefficient	I versus F Coefficient	R versus F Coefficient	I versus F Coefficient	R versus F Coefficient	I versus F Coefficient	R versus F Coefficient
Constant	-3.452** (0.267)	-2.708** (1.774)	-4.111** (0.347)	-4.485** (0.262)	-3.921** (0.808)	-4.492** (0.553)	-3.803** (0.808)	-4.444** (0.574)				
Male (vs. female)	-0.051 (0.229)	0.344* (0.153)	-0.103 (0.230)	0.242 (0.163)	-0.043 (0.229)	0.375* (0.154)	-0.111 (0.231)	0.241 (0.163)				
Adolescent (vs. preadolescent)	1.113** (0.237)	1.169** (0.148)	1.017** (0.240)	0.933** (0.156)	1.123** (0.238)	1.209** (0.149)	1.004** (0.242)	0.932** (0.158)				
Above poverty level (vs. below poverty level)	0.549* (0.222)	0.597** (0.141)	0.492* (0.224)	0.446** (0.149)	0.543* (0.222)	0.575** (0.141)	0.495* (0.224)	0.446** (0.149)				
CAFAS			0.008** (0.003)	0.020** (0.002)			0.009** (0.003)	0.020** (0.002)				
CBCL					0.007 (0.011)	0.025** (0.007)	-0.005 (0.011)	-0.001 (0.008)				
χ^2		123.52		269.67		136.08		269.85				
df		6		8		8		10				

NOTE: $N = 1,629$. CAFAS = Child and Adolescent Functional Assessment Scale, CBCL = Child Behavior Checklist. Standard errors are in parentheses. F = family (reference group), I = intermediate care, R = residential unit. Level of restrictiveness refers to the most restrictive living arrangement that the youth experienced during the six months postintake.

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

Figure 1
Predicted Probabilities of Residential Unit, Family Care, and Intermediate
Care at Six Months for Selected Values of the Child and Adolescent
Functional Assessment Scale (CAFAS) at Intake



with higher CAFAS scores than for youths with lower CAFAS scores. However, when the CBCL total problem score was examined in the presence of the CAFAS, the CBCL total problem score had no significant relationship with either of the outcomes.

One intuitive way to show the relationship between the CAFAS at intake and levels of care for the subsequent six months (as found in Model 3) is to present the predicted probabilities of residential unit, family, and intermediate care for selected values of the CAFAS. This is illustrated with an example case in which specific variables are held constant—specifically, an adolescent male who lives in a family with an income above the poverty line and who received an average score on the CBCL (i.e., 69.0). Figure 1 presents the predicted probabilities of residential unit, family, and intermediate care, which correspond to three different points of CAFAS: average CAFAS score (91.1); one standard deviation minus the average CAFAS score (46.6), which indicates lower impairment; and one standard deviation plus the average CAFAS score (135.6), which indicates higher impairment. The probabilities shown in Figure 1 represent the chance that the youth with the characteristics described above would have his most restrictive setting in a residential unit, in a family, and in intermediate care during the six months postintake when their CAFAS values at intake are average and one standard deviation below and above the average.

Figure 1 demonstrates that, for the youth specified in this illustration, the probability of time in a residential unit becomes much greater as the CAFAS score changes from low to high. Of those youths scoring one standard deviation below the mean on the CAFAS (i.e., low impairment), the predicted probability of being in a residential unit at any time during the six months postintake was 11.5%; of those youths scoring the mean of the CAFAS, 23.2%; and of those youths scoring one

standard deviation above the mean on the CAFAS (i.e., high impairment), 40.8%. Of those youths scoring one standard deviation below the mean on the CAFAS, the probability of remaining in a family setting during the six-month period was 80.7%; of those youths scoring average on the CAFAS, 67.3%; and of those youths scoring one standard deviation above the mean on the CAFAS, 49.0%.

Overall, there was low usage of intermediate care (i.e., specialized foster care, therapeutic foster care, individualized home emergency shelter, group home, job/core/vocational center, and group emergency shelter). Nonetheless, the probability of being in an intermediate care setting also increased as CAFAS values changed from low to high. Of those youths scoring one standard deviation below the mean on the CAFAS, the probability of being in intermediate care is 7.8%; of those youths scoring average on the CAFAS, 9.5%; and of those youths scoring one standard deviation above the mean on the CAFAS, 10.2%.

The multinomial logit model analysis revealed that the CAFAS was important in predicting level of restrictiveness of care needed, even in the presence of the CBCL and sociodemographic variables. Those youths with higher CAFAS scores were more likely than those with lower CAFAS scores to be placed in intermediate care or in a residential unit. The CBCL was significant only when the comparison was between being in a residential unit rather than being in a family setting, but only in the absence of CAFAS total score. When the CBCL total problem score was considered together with the CAFAS, the one significant effect of the CBCL (on the likelihood of being in a residential unit vs. being in a family) became insignificant.

Number of Days in Out-of-Family Care

Table 3 presents the OLS regression analysis for number of days in out-of-family care. The first column in each model represents unstandardized regression coefficients, and the second column represents standardized regression coefficients. As in the case of Table 2 for multinomial logit models, four models are presented. Model 4 shows the association of sociodemographic variables of gender, age, and family income with number of days in out-of-family care. According to Model 4, the average number of days in out-of-family care is not significantly different between males and females, while there is a significant difference between preadolescent and adolescent and between the youths whose family income is above the poverty line and the youths whose family income is below the poverty line. The average number of days in out-of-family care is higher for adolescents than for preadolescents by almost 29 days (unstd. coef. = 28.775). It is also higher for the youths with above poverty level of family income than for the youths with below poverty income by 14 days.

Model 5-a expands Model 4 by adding CAFAS total score. According to Model 5-a, given the sociodemographic variables for gender, age, and family income, the CAFAS total score has a positive relationship with average number of days in out-of-family care. Model 5-a indicates that after controlling for gender, age, and family income, on average, the number of days in out-of-family care increases by about four days with the one unit increase in CAFAS total score (10 points). Model 5-b adds CBCL total problem score onto Model 4. Model 5-b shows that given the sociodemographic variables, the CBCL total problem score does not have a significant relationship with the number of days in out-of-family care.

Model 6 takes into consideration CAFAS total score and CBCL total problem score together, in addition to gender, age, and family income. Model 6 expands Model 5-a by adding the CBCL total problem score (or, alternatively, expands Model 5-b by adding CAFAS total score). According to Model 6, even in the presence of CBCL total problem score, the CAFAS total score still has a significant positive relationship with number of days in out-of-family care. Like in Model 5-a, the one unit increase of CAFAS total score (10 points) is associated with about four days increase in the days in out-of-family care (unstd. coef. = 0.403). However, as implied in Model 5-b, the CBCL total problem score does not have a significant relationship with the number of days in out-of-family care, regardless of CAFAS total score.

Table 3
Ordinary Least Squares Regression Model Analysis of Days in Out-of-Family Care

	Ordinary Least Squares Regression Models											
	Model 4			Model 5-a			Model 5-b			Model 6		
	Unstandard Coefficient	Standard Coefficient	Unstandard Coefficient	Standard Coefficient	Unstandard Coefficient	Standard Coefficient	Unstandard Coefficient	Standard Coefficient	Unstandard Coefficient	Standard Coefficient	Unstandard Coefficient	Standard Coefficient
Constant	35.378** (5.433)	—	4.014 (6.819)	—	3.042 (18.380)	—	10.916 (17.884)	—	—	—	—	—
Male (vs. female)	5.367 (5.240)	0.036	1.549 (5.105)	0.010	6.205 (5.252)	0.041	1.280 (5.148)	0.009	0.009	0.009	0.009	0.009
Adolescent (vs. preadolescent)	28.775** (5.043)	0.203**	21.550** (4.998)	0.152**	29.827** (5.068)	0.211**	21.166** (5.074)	0.149**	0.149**	0.149**	0.149**	0.149**
Above poverty level (vs. below poverty level)	14.151** (5.015)	0.099**	9.087 (4.910)	0.064	13.431** (5.023)	0.094**	9.157 (4.915)	0.064	0.064	0.064	0.064	0.064
CAFAS			0.396** (0.055)	0.252**			0.403** (0.058)	0.256**	0.256**	0.256**	0.256**	0.256**
CBCL					0.457 (0.248)	0.064	-0.106 (0.254)	-0.015	-0.015	-0.015	-0.015	-0.015
R ²	.058		.116		.062		.116		.116		.116	
F statistics (df)	16.15 (3,793)		25.99 (4,792)		12.998 (4,792)		20.812 (5,791)		20.812 (5,791)		20.812 (5,791)	

NOTE: *n* = 797. CAFAS = Child and Adolescent Functional Assessment Scale, CBCL = Child Behavior Checklist. Standard errors are in parentheses.
 p* < .05. *p* < .01.

Discussion

The findings from the multinomial logit model analysis of most restrictive level of care and the regression analysis for number of days in out-of-family care both attest to the predictive utility of the CAFAS. The CAFAS score at intake predicted service utilization during the six-month period following intake. Furthermore, the CAFAS remained significant even after taking gender, age, and family income into consideration. The findings for the background variables of age, gender, and poverty are consistent with the extant literature. Males^{17,18} and adolescents¹⁸⁻²⁰ are more likely to receive psychiatric hospitalization as compared to females and preadolescents. As for family income, numerous studies have found that use of inpatient care and longer lengths of stay are closely associated with type and extent of insurance coverage.^{17,20-22} More recently, having public insurance (i.e., Medicaid), as opposed to no insurance or private insurance, was associated with more service use, apparently due to limited insurance benefits related to increased influence of managed care.²³ Unfortunately, determining whether access to insurance coverage and more generous benefit privileges would explain the findings in this study is not possible since service cost and source of payment are not available for this pooled CMHS data set.

Youths who had a very high score on the CAFAS at intake were more likely to receive services in a residential unit or intermediate care settings (e.g., therapeutic foster care, group homes in the community), as opposed to being in family care during the entire six months after intake, compared to youths with a low CAFAS score. In addition, the CAFAS predicted number of days a youth would spend in out-of-family placements (i.e., in a residential unit or intermediate care). Youths with high CAFAS scores at intake were more likely to have longer stays in these placements as compared to youths who had lower CAFAS scores at intake. Thus, for youths who were placed outside of their family, a high CAFAS score at intake should be regarded as an indicator of being at high risk for a lengthier placement.

Implications for Behavioral Health Services

These findings have important implications for managing resources. At entry into the system, youths with high CAFAS scores can be identified. If appropriate, these youths can be targeted for specific services so as to divert the youths from care in a residential unit, such as case management, multiagency treatment team involvement, a high level of parental participation, or a specific mode of therapy. Furthermore, if at any time a youth enters a placement outside of his or her family setting, the cases involving youths with high CAFAS scores at intake should be monitored more closely to try to minimize the length of time in out-of-family care. At the very least, their progress could be actively tracked by observing changes in the youths' profiles across the eight CAFAS subscales. This closer scrutiny could be accompanied by increased clinical supervision of the case or by targeting such cases for an agency-wide quality assurance study. Agencies and researchers can then study these youths to determine the types of interventions that reduce expensive and restrictive placements and/or reduce length of placements.

These monitoring activities can have a positive impact on performance-based outcome indicators. Most states have performance-based outcome indicators that are mandated, such as number of out-of-home placements, number of youths receiving intensive home-based services, and number of days in out-of-family placements. The CAFAS can be extremely useful in achieving the agency's goals for these indicators by identifying, at the onset of services, youths at risk for being recipients of these types of interventions.

In comparison to the CBCL, the CAFAS is a more consistent predictor of service utilization. The CBCL did not predict the distinction between intermediate care and family care in the analysis of most restrictive level of care. In addition, it did not predict number of days in out-of-family care. Although the CBCL did predict the distinction between residential and family care, it did not remain a significant predictor when the CAFAS was included in the model. The results of this study are con-

sistent with previous research³ in which the CBCL did not significantly predict service utilization or cost, whereas the CAFAS did.

Despite the finding that the CAFAS is a more powerful predictor of subsequent service utilization, the CBCL provides information that complements the CAFAS. The two measures differ in type of rater (i.e., the clinician vs. the parent), content (i.e., impairment vs. symptoms), reference group (i.e., referred vs. community sample), and time frame rated in this study (i.e., last three months vs. six months). Rater variance is a likely source of the difference observed in predictive validity given that cross-informant agreement between different types of informants is modest at best, irrespective of the type of assessment measure (e.g., interview, questionnaire, etc.).^{24, 25} As a result, users may choose to include both measures in their assessment battery because they provide different perspectives.

A couple of important caveats should be mentioned. The sample of youths in this study should not be assumed to be representative of youths with SED. Whereas all of the youths were to have an SED or be at risk for developing an SED, the study design of the national sample called for collecting data at six months only if the youths were still in services at that point. Unfortunately, how the youths with data at six months specifically differed from those without data is unknown. As a result, it cannot be assumed that these findings are representative of SED youths in general. Nevertheless, the results still provided an opportunity to examine the predictive utility of the CAFAS for those youths who continued to receive services.

In addition, these findings may not apply to situations in which prospectively CAFAS scores are used to determine level of funding unless specific precautions are taken. Under such circumstances, any measure, whether completed by the clinician or the parent, could be affected by the motivations of the informant or the rater. Using the CAFAS as it is typically implemented in clinical settings is likely to minimize the undesirable effects of such pressures.^{6, 12, 26} The rater reads through the items contained in each subscale and marks those descriptions that are true for the youth. The specific item endorsements chosen determine and justify the scores obtained for the youth. In addition, inclusion of this information in the client's clinical record is recommended because it ensures that the clinician will apply to the CAFAS ratings the same high standard, related to veracity, as is done for any documentation placed in the client's record. Thus, even if an oversight authority intends to analyze only the CAFAS subscale scores or total score, it is wise to require that the specific item endorsements are placed in the youth's record.

In terms of future research efforts, the next step is to evaluate whether the strengths and resources of the youths and their caregivers will contribute to our understanding of service utilization or outcome. The current version of the CAFAS includes a list of strengths for each of the eight youth scales and for each of the two caregiver scales so that competencies can be included in the prediction model.²⁷ For example, "likes going to school" and "gets along okay with teachers" appear as strengths on the school/work domain and "caregiver provides a stable environment" on the caregiver domain. The CAFAS is unchanged even though identifying strengths is now an option. The list of strengths can also be conceptualized as goals, facilitating the translation of problems into treatment goals. The intent is to empirically study whether these positive behaviors have predictive value for service utilization as well as whether they moderate outcome.

The findings in this study suggest that the results previously observed with a nonimpoverished and, overall, less impaired sample of youths^{3, 6} are still found among an impoverished and, overall, much more impaired sample of youths. The CAFAS at intake was a significant predictor of subsequent service utilization. The information generated by the CAFAS is helpful in making decisions about allocation of resources and, as treatment progresses, in continuously monitoring whether there is an adequate match between the needs of the client and the resources being employed.

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