

FINAL PROGRESS REPORT ON U01MH54279-05
Caring for Children in the Community
P.I. Adrian Angold MRCPsych

SPECIFIC AIMS OF THE ORIGINAL PROPOSAL

The specific aims of the original proposal were threefold:

- A. **TO DESCRIBE SERVICE NEED** in terms of (a) psychiatric diagnosis, (b) psychosocial impairment, (c) symptom severity, (d) risk factors, and (e) family burden. In particular, we will produce estimates of need for children with both a DSM disorder and seriously impaired functioning (severe emotional disturbance (SED)).
- B. **TO DESCRIBE SERVICE USE** in the mental health/substance abuse, health, school, social services, and juvenile justice sectors. Our research and that of others has shown that service use is a dynamic process, with individuals moving in and out of services and across agencies. Within a longitudinal framework, we will describe **B(i) Patterns of service use** including: (a) help seeking, (b) amount of service use, (c) types of service use, (d) changes in level of care, and (e) service use across sectors; and **B(ii) Factors affecting service use**. The longitudinal component of the study will determine what factors identify those who will develop disorders or move into service use and who might benefit from prevention efforts. Relevant predictors include: (a) demographics (age, race, urban/rural residence), (b) economic factors (family income, employment, costs of services), (c) clinical factors (symptom severity, diagnosis, psychosocial impairment), (d) family factors (family burden, including the economic impact of child mental health disorder on the family, family history of mental disorders, family configuration, family functioning), and (e) service system factors (service availability, barriers to service use, community resources, costs, and financing mechanisms, including Carolina Alternatives).
- A. **TO DESCRIBE SERVICE-USERS' AND NON-SERVICE -USERS' OUTCOMES** in terms of: (a) clinical outcomes (diagnosis, psychosocial impairment, symptom severity, and developmental level), (b) "policy relevant outcomes"- imprisonment, teenage pregnancy, death by homicide, suicide, or accident, school dropout, and quality of life, (c) family outcomes (burden, family functioning, parental mental health), (d) family economic outcomes, and (e) service outcomes (satisfaction with services, dropout, sector changes, changes in restrictiveness of setting, costs of services). Again, the focus will be on prediction of these outcomes.

IMPLEMENTATION OF THE STUDY

SAMPLE AND SETTING

The four counties chosen for this study make up one mental health catchment area served by a single child guidance clinic. The Bureau of the Census classifies 76% of the population as living in rural areas, and 50% of the area's child population (0 -- 18) as African-American. The remaining child population in both areas is White, except for a few American Indian and Hispanic inhabitants. Median family income at the last census was

\$27,794, compared with \$35,225 for the USA and \$28,280 for the state of North Carolina. While the median family income of White families in the area was \$33,788, that of African American families was \$19,914.

Screening phase

Basic data on the population of children living in the area was obtained from the four public school districts' Schools Information Management Systems (SIMS). Since almost all children in this area attend public schools, the SIMS provided the best information on the age and home address of children in the area. The 17,117 children aged 9-17 in the SIMS were sorted by households; the probability of selection was proportional to the total number of age-eligible children in the household. Within the selected age range, one child was selected on an equi-probability basis to generate a total screening sample of 4,500 children. Each child was then allocated to one of 15 cohorts, corresponding to the fifteen months of projected data collection. Which cohort a child could enter was constrained only by the requirement that the child be within the study's age range throughout the projected month of interview. Thus, each of the 15 cohorts was a random sample (without replacement) of the population of children.

Parents completed a brief telephone questionnaire, on the basis of which a subsample of children was selected for intensive assessment. The goal was to increase the number of probable "cases" of mental health service use in the sample, while retaining the capacity to generate population prevalence estimates.^{9; 10} The screening measure consisted of the "externalizing" broad band scale items from the Child Behavior Checklist (CBCL).^{11; 12} The single substance abuse question in the CBCL was expanded to cover specific substances (tobacco, cannabis, inhalants, etc.), for a total of 57 questions. The CBCL was validated using mental health service use as the criterion.¹³

We selected a parent-reported questionnaire for four reasons: (1) Pilot testing showed that screening two or more people (for example, a parent and the child) greatly increased refusals and incomplete data without much improvement in case identification; (2) Evidence from previous studies suggested that parental reports of behavioral problems best predicted most types of psychopathology and service use;¹²⁻¹⁴ (3) We knew from GSMS that these behavioral items were successful in screening for children with "internalizing" problems as well as "externalizing" problems.³ Previous studies have attested to the CBCL's reliability and ability to identify child mental health services users.^{11; 14}

The telephone screening interviews were administered by a highly experienced team of telephone interviewers maintained by the Research Triangle Institute (RTI), using a computerized administration/response entry package. At the end of the questionnaire, the score was automatically computed, and on the basis of that score individuals were selected for interview as described below. If telephone contact could not be made after 10 attempts, the family was referred for tracing and face-to-face screening by one of the field interviewers. Of the 4500 families selected, 3941 (87.6%) were eligible for the study and 91.7% of these (3613) completed screens. The others had moved from the study area or had incorrect location or age data (559), refused the screen (328), or could not be located (107).

Interview phase

The goal was to optimize the two-stage design to provide the narrowest variance estimates and maximum statistical power from a sample of fixed sized, determined by the available budget. In designing the sampling frame we relied on theoretical work of Erkanli and colleagues,¹⁵⁻¹⁸ which provides equations for determining the optimal sampling fractions from two or more strata generated by a screening design. Data from GSMS and the first four months of the study were used to generate measures of sensitivity and specificity.

In the first four months of CCCS, the decision rule for second stage selection was the same as for GSMS; i.e., 100% of those scoring above 20 on the screen, and a 10% random sample of the rest, were invited to participate in the interviews. Analyses of these data showed that the screen scores were almost identically distributed in CCCS and GSMS, and that the screening properties of the screen were very similar in relation to the diagnostic interviews.

In the second phase, using the decision rules suggested by Erkanli's optimization studies, separate sampling fractions were used for each screen decile. Sampling fractions were computed based on the sensitivity and specificity of the screen for the presence of a psychiatric diagnosis in each screen decile, using data from the first wave of GSMS. The final sampling fractions ranged from 10.9% of the lowest-scoring decile to 51% of the highest-scoring decile. After each screen was completed and scored by the computer program, it generated a random number for scores within each decile to determine whether that family would be asked to participate in the interview phase of the study. The process of weighting back to population prevalence estimates is described below.

Procedures for interviewing phase

Each index child and one of his/her parents were interviewed in their homes using a battery of measures designed to test the specific aims

All field interviewers had at least bachelor's level degrees, and received one month of initial training, including training in identifying and reporting abuse and neglect as required by the state, and procedures for obtaining clinical backup if suicidal intent was suspected. After training, quality control was maintained through post-interview reviews of each schedule, weekly staff meetings to review audiotapes of randomly selected field interviews, and regular refresher sessions with clinical staff.

Participating parents and children met together with two interviewers, who reviewed the study and obtained informed consent. Parent and child were then interviewed separately in different rooms to ensure privacy. Interviews were tape-recorded, to assist with coding and quality control. Each parent and child was paid \$15 at the end of the interview.

Data management and analysis

Completed and coded interviews were checked by a supervisor for accuracy, and electronically for internal consistency and completeness. SAS programs created diagnoses and symptom scales, and calculated prevalence estimates, 95% confidence intervals (CI), and group comparisons using the empirical option of the SAS program GENMOD, which provided appropriately weighted parameter estimates, standard errors, and p. values, corrected for the study's sampling design and the response rates in the different screening strata.

RESULTS

DEMOGRAPHIC CHARACTERISTICS OF SCREENED AND INTERVIEWED SAMPLES

Table 1 shows the characteristics of the sample screened, the selected study participants, and those who were selected but refused participation. The screened sample (N=3613) and selected sample (N=1302) did not differ on any available demographic characteristic. African American and White screened youth had similar mean scores on the screen (14.1, SD 12.7, vs. 15.2, SD 13.2, $t < 1$, ns) and in the proportion with scores of 20 or more (25.4% vs. 28.2%, $\chi^2 < 1$, ns).

At the interview stage, the refusers and participants were not significantly different in age distribution, or in the proportion that was male, defined itself as living in a rural area, was two grades or more behind for age, or reported using mental health services. Interviewed subjects had more behavioral problems on the screen than did refusers (21.0 vs. 16.3); perhaps this group was more likely to see the study as potentially helpful. African Americans were more likely than White families to participate when invited (87% vs. 65%).

As a result of financial constraints, it was possible to complete interviews on only the first 12 of the 15 cohorts of subjects. However, interviews were completed with 87 families from cohorts 13 and 14. Since these cohorts were not completed, and so cannot be assumed to represent an appropriate sample, these individuals have been dropped from all analyses. Hence the sample of 921 discussed here is the reasonable representative component of a total of 1008 interview pairs actually completed.

	All screened (N=3615)	Refusers (N=383)	Participants (N=920)	Test*
% Male	50.0	52.2	52.1	$\chi^2 < 1.0$, ns
Mean age at screen (SD)	12.8 (2.5)	12.8 (2.5)	12.6 (2.6)	$F < 1.0$, ns
% Rural	67.2	67.9	63.8	$\chi^2 = 1.9$, ns
% used mental health services	5.3	6.6	8.4	$\chi^2 = 1.0$, ns
% 2 or more grades below age	1.8	2.6	2.5	$\chi^2 < 1.0$, ns
% White	44.4	50.5	38.0	$\chi^2 16.1$ $p < .001$ [§]
African American	53.8	47.9	59.7	
Other	1.8	1.6	2.3	
Mean screen score (SD)	19.6 (14.6)	16.4(12.9)	21.0 (15.0)	$F = 17.4$ $p < .001$

* test of the hypothesis that the proportion with characteristic, or mean score on characteristic, does not differ between refusers and participants

[§] compares White with African American children only

SPECIFIC AIM A: THREE-MONTH PREVALENCE OF PSYCHIATRIC DIAGNOSES

Table 2 shows the three month prevalence estimates and 95% CIs for DSM-IV and selected DSM-III-R diagnoses, for the whole sample, and separately by gender and ethnicity. There were 20.1% of children with one or more DSM-IV diagnosis. Behavioral disorders (11.2%) were more common than emotional disorders (7.7%). Among the specific diagnoses, the most common were conduct disorder (CD) (5.4%), particularly childhood onset CD (4.1%), anxiety disorders (5.6%), of which the most common was separation anxiety (3.0%) and substance abuse or dependence (4.7%). Among the depressive disorders (2.9%) minor depressions (newly defined as an experimental category by DSM-IV) were the most common (1.7%). One third of cases of oppositional defiant disorder (ODD) were comorbid with CD; excluding this group the prevalence of pure ODD was quite low (1.6%). Of cases of attention deficit hyperactivity disorder (ADHD) with onset before age 7 (1.2%), more were attributable to the combined subtype (0.7%) than to the predominantly hyperactive-impulsive subtype (0.3%) or the purely inattentive subtype (0.2%). Six percent of children (29.8% of those with a disorder) had more than one diagnosis. Of these, 31.0% had both an emotional and a behavioral diagnosis. As expected, there were very few cases of obsessive compulsive disorder, pica, hypomania or mania, anorexia, bulimia, schizophrenia, PTSD, or Tourette's disorder. Disorders with fewer than 5 cases are not included in Table 2.

Table 2. Three-month prevalence of DSM-IV and selected DSM-III-R diagnosis, by race and gender

Diagnosis	Total (N=920)	White (N=379)	African American (N=541)	Female (N=438)	Male (N=482)
DSM-IV Attention Deficit Hyperactivity					
Combined	0.7(0.4-1.3)	0.7(0.3-1.6)	0.7(0.3-1.6)	0.1(<0.1-0.8)	1.3(0.7-2.4)
Predominantly inattentive	0.2(0.1-0.6)	0.3(0.1-1.1)	0.2(<0.1-0.7)	0.2(0.1-0.8)	0.2(0.1-1.0)
Predominantly hyperactive-impulsive	0.3(0.1-0.7)	0.1(<0.1-0.7)	0.4(0.1-1.2)	0.1(<0.1-0.6)	0.4(0.2-1.2)
Any type	1.2(0.7-1.8)	1.1(0.5-2.1)	1.3(0.7-2.3)	0.4(0.2-1.1)	1.9(1.1-3.2)*
DMS-IV Conduct disorder					
Childhood onset	4.1(2.9-5.8)	4.3(2.7-6.8)	3.9(2.3-6.5)	1.7(0.8-3.4)	6.5(4.4-9.6)*
Adolescent onset	1.3(0.7-2.2)	1.2(0.5-2.6)	1.4(0.7-2.9)	1.2(0.5-2.9)	1.3(0.7-2.6)
Either type	5.4(4.0-7.2)	5.5(3.7-8.1)	5.3(3.4-8.0)	2.9(1.7-5.0)	7.8(5.5-11.0)*
DSM-IV Oppositional defiant					
Excluding those with CD	1.6(0.9-2.8)	2.3(1.1-4.7)	1.0(0.4-2.2)	0.9(0.3-2.5)	2.3(1.2-4.4)
Including those with CD	2.5(1.6-3.8)	3.6(2.0-6.3)	1.5(0.8-2.9)	1.7(0.8-3.7)	3.3(2.0-5.4)
DMS-IV Substance abuse and dependence					
Substance abuse	4.7(3.3-6.8)	4.0(2.4-6.6)	5.4(3.3-8.7)	4.4(2.6-7.4)	5.0(3.0-8.2)
DSM-IV Depressive disorders					
Major depression	1.0(0.5-1.8)	1.5(0.7-3.1)	0.5(0.2-1.5)	1.2(0.5-2.8)	0.7(0.3-1.6)
Dysthymia	0.3(0.1-0.6)	0.3(0.1-1.0)	0.2(<0.1-0.9)	0.2(<0.1-0.9)	0.3(0.1-1.0)
Minor depression	1.7(1.0-2.8)	2.8(1.5-5.3)	0.7(0.3-1.5)	1.4(0.7-2.7)	2.0(0.9-4.1)
Any depressive disorder	2.9(2.0-4.2)	4.6(2.9-7.3)	1.4(0.8-2.5)*	2.8(1.7-4.6)	3.0(1.7-5.1)

DSM-IV Anxiety disorders					
Generalized anxiety	1.2(0.7-2.0)	1.7(0.9-3.3)	0.8(0.3-1.8)	1.2(0.5-2.7)	1.2(0.6-2.3)
Panic	1.2(0.5-2.9)	1.4(0.4-5.2)	0.9(0.3-3.1)	2.1(0.8-5.6)	0.2(0.1-1.0)
Separation anxiety	3.0(1.9-4.6)	4.1(2.2-7.3)	2.0(1.2-3.5)	3.4(1.8-6.5)	2.5(1.5-4.2)
Specific phobia	0.4(0.2-1.1)	0.2(<0.1-0.8)	0.6(0.2-1.9)	0.8(0.3-2.2)	-0- *
Social phobia	1.4(0.7-2.6)	1.1(0.4-2.9)	1.6(0.7-3.8)	1.6(0.6-4.0)	1.1(0.4-2.7)
Any of the above	5.6(4.1-7.5)	6.7(4.3-10.1)	4.7(3.1-7.0)	7.0(4.6-10.4)	4.2(2.8-6.3)
Obsessive Compulsive	0.2(0.1-0.8)	0.4(0.1-1.8)	0.1(<0.1-0.8)	0.4(0.1-1.6)	0.1(<0.1-0.8)
Agoraphobia	0.5(0.2-1.1)	0.2(<0.1-1.3)	0.7(0.3-1.9)	0.6(0.2-1.8)	0.3(0.1-1.3)
DSM-IV Elimination disorders					
Functional enuresis	2.4(1.6-3.5)	2.0(1.0-3.6)	2.7(1.7-4.4)	1.3(0.6-2.6)	3.5(2.2-5.4)
Functional encopresis	0.4(0.2-0.9)	0.5(0.2-1.5)	0.3(0.1-1.1)	-0-	0.9(0.4-1.9)*
DSM-IV Aggregate categories					
Any disruptive behavior disorder	7.0(5.4-9.0)	7.8(5.5-11.0)	6.2(4.2-9.1)	3.8(2.3-6.1)	10.1(7.4-13.6)*
Any behavioral diagnosis	11.2(9.1-13.8)	10.9(8.1-14.6)	11.5(8.5-15.4)	7.3(5.1-10.5)	15.2(11.6-19.5)*
Any emotional diagnosis	7.7(6.0-9.9)	10.0(7.1-14.0)	5.7(4.0-8.2)	8.9(6.2-12.4)	6.6(4.6-9.3)
One or more DSM-IV diagnosis	20.1(17.2-23.3)	20.8(16.5-25.9)	19.5(15.8-23.8)	17.7(13.9-22.2)	22.4(18.3-27.2)

More than one DSM-IV diagnosis	6.0 (4.6-7.7)	7.3 (5.1-10.5)	4.8 (3.3-6.9)	5.3 (3.5- 8.0)	6.6 (4.8-9.0)
DSM-III-R Diagnosis					
Attention Deficit Hyperactivity	0.9(0.5-1.5)	0.8(0.4-1.7)	0.9(0.4-1.9)	0.2(0.1-0.8)	1.5(0.8-2.7)
Conduct disorder	4.7(3.4-6.4)	4.7(3.0-7.3)	4.6(2.9-7.4)	3.3(1.9-5.5)	6.1(4.0-9.1)
Oppositional defiant	1.9(1.1-3.1)	3.2(1.7-5.8)	0.8(0.3-1.8)	1.1(0.4-3.0)	2.6(1.4-4.8)
Any depressive disorder	2.6(1.8-3.9)	4.1(2.5-6.7)	1.4(0.8-2.5)	2.6(1.6-4.4)	2.7(1.5-4.8)
Generalized anxiety	0.4(0.1-1.0)	0.8(0.3-2.2)	-0- *	0.4(0.1-1.6)	0.3(0.1-1.5)
Separation anxiety	3.2(2.1-4.8)	4.1(2.2-7.4)	2.4(1.4-4.1)	3.6(1.9-6.7)	2.8(1.7-4.6)
Any anxiety disorder	6.5(4.9-8.5)	7.8(5.3-11.4)	5.3(3.6-7.8)	7.9(5.3-11.4)	5.1(3.5-7.3)
One or more DSM-III-R diagnosis	18.9(16.2-22.1)	19.4(15.4-24.3)	18.5(14.9-22.8)	17.4(13.8-21.7)	20.5(16.5-25.2)

Comparison of prevalence of DSM-IV and DSM-III-R disorders

Selected DSM-III-R diagnoses on the same children, derived from the same interviews, are also shown in Table 2. The prevalence of one or more diagnoses was slightly, but not significantly, lower using DSM-III-R (18.9%). Anxiety diagnoses (6.5%) were slightly more common, while depression (2.6%), conduct disorder (4.7%), ODD (1.9%), and ADHD (0.9%) had rates very similar to those found using DSM-IV algorithms.

Effects of ethnicity, gender, and age on prevalence of DSM-IV diagnoses

Ethnicity: As Table 2 shows, there was very little ethnic difference in the prevalence of psychiatric disorder in general (White, 20.8%, African American, 19.5%). The only significant difference was a higher prevalence of depressive disorders in White than in African American children (4.6% vs. 1.4%, OR 3.4, 95% CI 1.6-7.4, $p=.002$). There were only small ethnic differences in the prevalence of behavioral disorders, in both boys (17.6% vs. 15.7%) and girls (6.4% vs. 7.9%).

Gender: Gender differences were in the direction expected from previous work: boys had more ADHD than girls (1.9% vs. 0.4%, OR 4.5, 95% CI 1.5-14.1, $p=.009$), and more disruptive behavior disorders, mainly childhood-onset CD (6.5% vs. 1.7%, OR 4.1, 95% CI 1.7-9.5, $p=.001$). The high rate of depressive disorders in White compared with African American children was particularly marked in boys (6.1% vs. 1.5%, OR 4.6, 95% CI 1.6-13.2, $p=.004$). Comparable figures for girls were 4.2% vs. 1.6% (OR 2.6, 95% CI 0.9-7.8, $p=.086$).

Age: The effect of age on disorders varied from diagnosis to diagnosis, with the result that the prevalence of psychiatric disorder showed a somewhat U-shaped distribution, with the lowest prevalence at age 12 and 13. Through age 13, the prevalence of psychiatric disorder was significantly higher in boys than in girls (OR 2.1, 95% CI 1.3-3.5, $p=.003$), largely as a result of their higher levels of behavioral disorders. From age 14 on, there was no overall difference between the genders (OR=1.0, 95% CI 0.5-1.7, ns), largely because the prevalence of anxiety and depressive disorders increased with age in girls. Substance abuse and dependence increased in both genders. Age patterns were similar for both ethnic groups.

SPECIFIC AIM B: SERVICE USE BY SECTOR

Table 3 shows the three-month prevalence of service use by sector. In the three months before the interview, 13.3% of the sample (36% of those with a psychiatric disorder) had used one or more professional service sectors for mental health care. The school system was the single most widespread provider of mental health services to children and adolescents in this area. The only service sector whose use for mental health care showed a strong effect of ethnicity or gender was the specialty mental health sector; that is, psychiatrists, psychologists, and other mental health care specialists working in child guidance clinics, hospitals, or as private providers. White children were twice as likely as African American children to use such services (6.1% vs. 3.2%, OR 2.0, 95% CI 1.1-3.5, $p=.026$). The ethnic difference in specialty mental health service use was significant for boys (9.0% vs. 4.3%, OR 2.2, 95% CI 1.1-4.5, $p=.036$), but not for girls (3.2% vs. 2.2%, OR 1.5, 95% CI 0.5-4.4, ns).

Table 3. Use of services for mental health care in the past 3 months, by race and gender					
	Total (N=920)	White (N=379)	African American (N=541)	Female (N=438)	Male (N=482)
Specialty mental health	4.6(3.5-6.0)	6.1(4.2-8.8)	3.2(2.1-4.9)	2.6(1.5-4.5)	6.6(4.7-9.1)*
General Medical	2.0(1.4-3.0)	2.8(1.6-4.7)	1.4(0.8-2.5)	1.7(0.8-3.4)	2.4(1.5-3.8)
Education	8.9(7.2-11.0)	8.6(6.0-12.1)	9.2(7.0-11.9)	8.6(6.1-12.0)	9.2(7.0-12.1)
Juvenile Justice	0.6(0.3-1.1)	0.6(0.2-1.6)	0.6(0.2-1.4)	0.3(0.1-1.2)	0.9(0.5-1.8)
Child Welfare	0.8(0.4-1.5)	0.4(0.1-1.2)	1.1(0.5-2.4)	0.8(0.3-2.3)	0.7(0.3-1.6)
Any	13.3(11.2-15.7)	13.7(10.5-17.7)	12.9(10.3-16.0)	11.6(8.7-15.1)	15.0(12.0-18.5)

* Prevalence significantly higher than in comparison group

Facilitators and barriers to mental health care

We examined the effects on service use of family resources, indexed by income and health insurance; perceived barriers to using mental health services, including distance, lack of transportation, and stigma; the degree of functional impairment caused by the child's mental illness, and the impact on the family of the child's symptoms.

Table 4 shows the distribution, for the whole sample and by ethnicity and gender, of key variables selected for their potential to affect service use. Almost half of African American children came from families living below the federal poverty line, compared with only 15.1% of White children. Poverty was reflected in the ethnic difference in private health insurance coverage: most White children, but only half of African American children, had some private health insurance. On the other hand, one third of African American children, compared with one in five White children, had some form of public health insurance (mainly Medicaid). As a result, the difference in proportions not covered by any health insurance was small.

Table 4. Predictors of mental health service use, by race and gender

	Total	White	African American	Female	Male
1. Psychiatric disorder					
% with current DSM-IV diagnosis	20.1(17.2-23.3)	20.8(16.5-25.9)	19.5(15.8-23.8)	17.7(13.9-22.2)	22.4(18.3-27.2)
2. Resources					
% in poverty	33.0(29.0-37.3)	16.0(11.6-21.7)	48.1(42.5-53.8)*	31.2(26.2-36.8)	34.8(28.8-41.5)
% public health insurance	26.5(23.2-30.1)	17.4(13.2-22.6)	34.4(29.7-39.3)*	24.3(20.2-28.9)	28.7(23.6-34.4)
% no insurance	9.6(7.4-12.4)	7.3(4.8-11.2)	11.6(8.4-15.8)	10.3(7.3-14.4)	8.9(6.1-13.0)
3. Barriers					
% with 3 or more barriers	18.0(15.2-21.2)	17.4(13.3-22.3)	39.3(34.4-44.5)	18.5(14.5-23.2)	17.6(13.9-22.0)
4. Impairment					
% impaired functioning	37.4(33.5-41.4)	35.2(29.2-41.6)	1.8(1.0-3.2)	33.5(28.4-39.0)	41.3(35.4-47.4)
5. Impact of symptoms					
% economic impact			9.6(7.2-12.6)		4.0(2.6-6.1)
% social impact	2.6(1.8-3.8)	3.6(2.3-5.7)	25.3(21.1-30.1)	1.3(0.7-2.6)	10.4(8.0-13.5)
% psychological impact	9.3(7.6-11.4)	29.5(24.2-35.4)	12.9(10.0-16.5)	8.2(5.9-11.3)	30.9(25.9-36.3)
% 2 or more impacts	27.2(23.8-30.9)	15.0(11.6-19.3)		23.8(19.3-29.0)	16.1(12.7-20.1)
	13.9(11.6-16.6)			11.7(8.8-15.5)	

* Significantly different from White children in bivariate analysis, $p < .05$

Table 5 shows the results of a series of logistic regression analyses of service use by sector, using the combined set of predictors. Age, gender, and ethnicity were forced into each model.

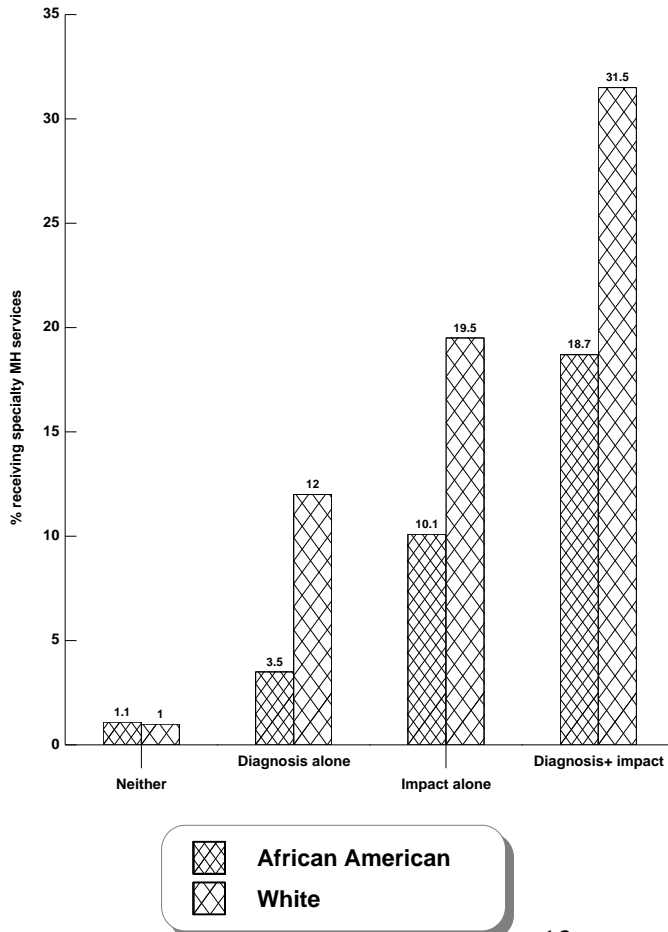
Table 5. Predictors of service sector use for children’s mental health problems: Odds ratios and 95% CI for final model for each sector					
	Specialty MH	General medical	School	Child welfare	Juvenile justice
Race (1=White)	0.4(0.2-0.8)*	~	~	~	~
Gender (1=Male)	~	~	~	~	~
Age	~	0.8(0.6-0.9)**	~	0.8(0.7-0.9)***	1.3 (1.1-1.7)*
Poverty	~	~	~	~	~
Insurance: Public vs. Private	3.4(1.7-7.0)***	~	~	~	~
Public vs. None	~				
Diagnosis	~	3.0(1.2-7.6)*	3.8(1.9-7.5)***	3.5(1.1-11.0)*	~
Impairment	3.5(1.3-9.3)*	~	2.3(1.2-4.5)*	~	19.0 (2.3-156.8)**
Perceived barriers	~	~	~	3.7(1.0-13.2)*	~
Parental impact: Economic	9.1(3.2-25.6)***	~	~	~	~
Family, friends	3.0(1.1-8.2)*	~	~	~	~
Psychological	2.8(1.1-6.9)*	5.5(2.2-14.2)***	3.09(1.7-5.3)***	~	~

* p<.05 ** p<.01 *** p<.001

Looking first across the rows, Table 5 shows that in a multivariable model *ethnicity* influenced access to specialty mental health care, but not to other sectors. The effect of *gender* was no longer significant for any service sector. *Age* affected use of mental health services through the general medical, child welfare, and juvenile justice sectors: primary medical care and child welfare provided services to younger children, and juvenile justice to older children. School and specialty mental health care services were evenly spread across the age range. The use of services was not directly affected by *poverty*, but access to the specialty mental health sector was affected by the type of *health insurance* to which children had access. Children receiving Medicaid were more likely than the privately insured or uninsured to receive specialty mental health care. Insurance status did not affect access to other service sectors.

Diagnosis predicted use of general medical, school, and child welfare services, but it was *functional impairment*, not diagnosis, that was associated with use of the specialty mental health and juvenile justice sectors. Impaired children were also more likely to use school-based services. In general, users of mental health services in every sector reported more *barriers to care* than non-users, although the relationship was significant only for child welfare. The more often families were in contact with the service system, the more opportunities they had to report difficulties with getting needed care, and the child welfare services were in touch with some of the heaviest service users across all sectors.

The *impact* of the child's symptoms on the family was the strongest predictor of use of specialty mental health services and mental health care in medical settings,



and a strong predictor of use of services provided through the schools. It did not predict use of services through child welfare or juvenile justice, neither of which are initiated by parents directly. The *psychological impact* of having a child with symptoms, expressed in parental anxiety, depression, drug use, irritability, and feelings of inadequacy, was the strongest correlate of service use. Parents whose child used specialty mental health services also reported damage to relationships with family and friends, economic burden caused by treatment costs, and in some cases loss of income because of inability to work.

Looking the other way, down the columns of Table 5, access to *specialty mental health care*

was predicted most strongly by the impact of the child's problems on the family, especially their impact on the parents' psychological state (anxiety, depression, etc.) and on the family's income. Even after controlling for insurance status and indices of service need, African American children were only 40% as likely as White children to receive care in the specialty mental health care sector. Medicaid increased specialty mental health service use, private insurance did not. Having a DSM-IV disorder did not increase the chance of specialty mental health care once impairment and parental impact were entered into the model. Figure 1 illustrates the importance of parental impact on use of specialty mental health services. In both African American and White children, the presence of parental impact made a dramatic difference to the probability of receiving it.

. The *general medical care* sector was more often used by younger children, especially those whose parents were experiencing psychological problems because of the child's symptoms. Ethnicity, psychiatric diagnosis, functional impairment, and availability of health insurance did not affect the likelihood of using primary medical care as a resource.

In the case of *school mental health services*, psychiatric diagnosis did predict use. Further analysis showed that anxious children were over four times as likely as non-anxious children to have used school services in the past three months (31.4% vs.7.1%, OR 5.5, 95% CI 2.6-12.0, $p < .0001$). This suggests that school services may more often have been used at the instigation of a child who was worried about something, rather than at the instigation of teachers. Like specialty mental health services, school services were used by children with functional impairment, and those whose parents were feeling a psychological burden caused by the child's problems. African American and White children were equally likely to receive treatment provided by school mental health services.

The mental health services provided through *child welfare* went mainly to younger children. Access was driven by diagnosis; in this case by behavior disorders. The only significant predictors of use of mental health services through *juvenile justice* were age and functional impairment.

SPECIFIC AIM C: TO DESCRIBE SERVICE-USERS' AND NON-SERVICE -USERS' OUTCOMES

Individuals who were still under the age of 18 at 18 month follow-up were re-interviewed. Parent and child interviews with 410 (81% of the eligible sample) were conducted. These interviews have been cleaned and entered. Over the next year we intend to complete analyses relating to the clinical outcomes of service users and non-users.