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Associations of Sociodemographic Factors and Psychiatric Disorders With Type of School-Based Mental Health Services Received by Youth

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A B S T R A C T

Purpose: Schools provide access to mental health services for traditionally underserved youth. However, there is variability in the types of school-based services students receive (e.g., school counseling, services in separate classrooms, or schools serving students with psychiatric disorders). Prior research has typically not distinguished among these different types of school-based services. The present study examines sociodemographic characteristics and disorders associated with the types of services received in schools.

Methods: Data were analyzed from a sample of adolescent–parent pairs in the U.S. National Comorbidity Survey Adolescent Supplement who received school mental health services (N = 1,204). DSM-IV diagnoses were based on the Composite International Diagnostic Interview administered to adolescents and questionnaires self-administered to parents. Adolescents (aged 13–18 years) and parents also responded to questions about lifetime school-based mental health service receipt.

Results: Among those receiving school-based mental health services, almost one-third (29.7%) received services in a separate classroom and almost one-fourth (22.3%) in a separate school. Increased likelihood of lifetime placement in a separate classroom or school was detected among older youth, males, blacks, Latinos, youth with learning disabilities, those whose parents had fewer years of education, and those who received community-based mental health services. Oppositional defiant disorder was associated with increased lifetime placement in a separate school.

IMPLICATIONS AND CONTRIBUTION

Youth who are traditionally underserved by the children's mental health service system are also more likely to receive school-based mental health services in separate classroom and school settings.

Conflict of interest: In the past 3 years, R.C.K. received support for his epidemiological studies from Sanofi Aventis; was a consultant for Johnson & Johnson Wellness and Prevention, Shire, Takeda; and served on an advisory board for the Johnson & Johnson Services Inc. Lake Nona Life Project. R.C.K. is a co-owner of DataStat, Inc., a market research firm that carries out healthcare research. Other authors have no conflicts of interest relevant to this article to disclose. Statistical expertise provided by Gruber, Kessler, Le Tai, Xuan, and Zaslavsky.

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Conclusions: The results advance the evidence base by indicating that racial/ethnic minority youth and those whose parents have fewer years of education were more likely to receive school-based mental health services in separate settings. These results provide more context to studies of school-based mental health service receipt.

Studies consistently find that school and specialty mental health service sectors (e.g., outpatient and inpatient settings) are the two primary providers of mental health services for U.S. youth [1–5]. However, youth accessing services through these two sectors differ on several important characteristics. In particular, racial/ethnic minority youth are less likely than white youth to receive mental health services in specialty service sectors; however, these differences attenuate and become nonsignificant in schools [3,6,7]. This result has been used to suggest that schools may contribute to reducing racial/ethnic disparities in service access.

Although schools provide access to mental health services for traditionally underserved youth, the types of school-based mental health services that students access vary and include using school counseling services as well as receiving services in separate classrooms or schools designated to serve students with psychiatric disorders. Prior research has not always distinguished among these different types of school-based mental health services [2,4,5]. Yet, there is evidence that student sociodemographic factors are differentially associated with the types of school-based services they receive. For example, although not specific to mental health, the Department of Education has documented that black and Latino students are more often assigned to separate classroom and school settings than their white peers [8].

Documenting the type of school-based mental health services that youth receive has implications for interpreting research on mental health service access and may inform decision-making about service provision. Separate classrooms and schools are intended to provide individualized behavioral planning and intensive therapeutic interventions [9]. However, there is evidence that these settings do not always fulfill those functions effectively [10]. Teachers of separate classes for students with psychiatric disorders are less likely than other teachers to be fully qualified, have prior teaching experience, and feel adequately prepared for their responsibilities [11,12]. Some research shows that students tend to make little academic or behavioral progress in separate settings, and that their skills may actually decline over the duration of placement [13–15].

The present study builds on prior research conducted with the National Comorbidity Survey Adolescent Supplement (NCS-A) [4,6], which documented different profiles of youth accessing services in schools, compared with other sectors. Here, we look specifically among youth receiving school-based mental health services at sociodemographic factors and disorders associated with lifetime receipt of (1) school counseling services, (2) services in a separate classroom, and (3) services in a separate school. Second, we assess sociodemographic factors and disorders associated with the type of services received in the first year of school-based mental health service receipt, as an indicator of the intensity of mental health supports initiated in schools.

Method

Sample

Data are from the NCS-A, a face-to-face survey of U.S. adolescents aged 13–18 years, administered between 2001 and 2004. As described in more detail elsewhere [16–18], the NCS-A sample combined a nationally representative household sample (904 adolescents) and a school sample (9,244 adolescents), with response rates of 86.8% and 82.6%, respectively. One parent or guardian (henceforth *parent*) was asked to complete a self-administered questionnaire (SAQ) about their adolescent and mental health service use. The SAQ conditional response rate was 82.5%–83.7% in the household–school samples. This report draws from the sample of 6,483 adolescent–parent pairs for whom data are available from adolescent interviews and parent SAQs. Specifically, our study focuses on the subsample of 1,204 adolescent–parent pairs who reported some use of school-based mental health services. Human subjects' committee approval was obtained at Harvard Medical School and the University of Michigan.

Diagnostic assessment

Adolescents were administered a modified version of the Composite International Diagnostic Interview (CIDI), a fully structured interview designed for use by trained lay interviewers to assess mental disorders using criteria consistent with the DSM-IV [19,20]. Fifteen disorders assessed include mood (major depressive episode or dysthymic disorder [MDE/DYS] and bipolar disorder), anxiety (panic disorder and agoraphobia, social phobia, specific phobia, generalized anxiety disorder, posttraumatic stress disorder [PTSD], and separation anxiety disorder), behavior (attention-deficit/hyperactivity disorder, oppositional defiant disorder [ODD], conduct disorder [CD], and intermittent explosive disorder), substance (alcohol abuse and dependence and drug abuse and dependence), and eating disorders (anorexia nervosa, bulimia nervosa, and binge-eating disorder). Parent SAQs provided information about adolescent MDE, dysthymic disorder, attention-deficit/hyperactivity disorder, ODD, and CD. We focus only on lifetime prevalence because the placement variables used are lifetime variables. Placement in separate settings often happens early in a student's academic trajectory and may not be reflected by placement in the past 12 months or 30 days. We categorized adolescents as having 0, 1, 2, 3, or 4+ disorders. Parent and child reports were combined using the "or" rule, by which symptoms were considered present if they were reported by either respondent. A study examining the clinical validity of the CIDI diagnostic interview that used this combination of parent and child response found its validity to be adequate, with area under the receiver operating characteristic

curve in the range of .78–1.00 for each diagnosis assessed when compared with a gold-standard clinical interview [21]. A number of studies have reported on parent and child diagnostic concordance in the NCS-A [22–24].

School-based placements

Adolescent and parent surveys assessed whether adolescents received mental health services in their lifetime. NCS-A service use questions were largely derived from the Service Assessment for Children and Adolescents [25]. The Service Assessment for Children and Adolescents has been previously identified as a valid measure of mental health service use when compared with clinical records [26]. Service use in schools was classified into the following placement categories: (1) school counseling ("counseling or therapy in school for emotional or behavioral problems?"), (2) placement in a separate classroom ("Were you ever placed in a special classroom in a regular school for students with emotional or behavioral problems?"), and (3) placement in a separate school ("Were you ever placed in a special school for students with emotional or behavioral problems?"). Although there are other reasons that students are placed in separate classrooms or schools, these questions specifically asked about placements designed for students with emotional and behavioral problems. As with psychiatric diagnoses, we used the "or" rule to indicate the presence of each type of service use if reported by either the parent or the child. Kappa statistics indicated moderate agreement between parent and youth report of the use of each of the three services: kappa = .30 for school counseling; kappa = .40 for separate class; and kappa = .41 for separate school. The results varied somewhat based on gender and race/ethnicity, but in all cases, the kappa statistic ranged between .22 and .48. Parents or adolescents endorsing any school service also indicated the adolescent's age at first receipt of the service, which was used to establish the temporal sequencing of placement. We combined parent and child report using the minimum age of service initiation reported by either respondent. The correlation between parent and child reports of first age of service use indicated moderate agreement: r = .49, $p < .001$ for school counseling; r = .56, $p < .001$ for separate classroom; r = .49, $p < .001$ for separate school.

Covariates

Sociodemographic variables include respondent's age, sex, urbanicity (metropolitan areas, nonmetropolitan urban areas, and rural areas), Census region (Northeast, Midwest, South, and West), number of biological parents in the household, and parent educational attainment (less than high school, high school, some college, and college graduate). Race/ethnicity was assessed by self-report using the census categories non-Latino white, non-Latino black, Latino, and other. Learning disabilities were measured using one question from the parent SAQ asking parents whether their child had ever been diagnosed with a learning disability.

In addition, the use of community-based mental health services was assessed based on youth self-report of whether they ever received services in a "community mental health center or other outpatient mental health clinic."

Data analysis

Data were weighted to adjust for differential probabilities of selection, differential nonresponse, and residual differences in sociodemographic variables between the sample and tract-level 2000 U.S. Census population. Weighting is described in more detail elsewhere [16]. We used discrete-time survival analysis with person-years as the unit of analysis to examine the predictors of each of the three types of school service placement. Person-years began at age 4 years, the youngest age evaluated for possible service use. Person-years were coded "0" on the dependent variables until the age of first school-based service use, "1" at the year of first school-based service use, and were censored after that year. Age-of-onset of each DSM-IV disorder was examined as a time-varying predictor along with race/ethnicity and other sociodemographic predictors as time-invariant predictors of school-based placements.

Several discrete-time survival equations were estimated to predict the probability of receiving school counseling services, placement in a separate classroom, or placement in a special school. Models included sociodemographic predictors as well as predictor variables for both type and number of disorders. This modeling approach (used previously; [27]) was developed based on earlier research demonstrating the separate effects of each type of disorder and number of comorbid disorders [28]. Next, we investigated the probability of placement in a restricted setting in the *first* year of school-based service receipt, among those receiving any school-based mental health services. In all analyses, we controlled for whether youth reported lifetime receipt of community-based mental health services, as prior studies indicate that community-based mental health service receipt is associated with an increased likelihood of subsequent school-based mental health service receipt [1].

Standard errors were estimated using the Taylor series linearization method to account for sample weights and clustering. The significance of predictor sets was evaluated using Wald χ^2 tests based on Taylor series coefficient variance-covariance matrices. These procedures were implemented using the SUDAAN software system. Statistical significance was consistently evaluated using .05-level two-sided tests.

Results

Lifetime school service use

The sample of respondents included in the present study was 48.8% female. Students identified as 14.4% Latino, 15.1% black, 65.6% white, and 5.0% other. Almost one-fifth (18.6%) of NCS-A respondents received some school-based mental health services in their lifetime. Most of these adolescents (83.3%; 15.5% of full sample) received school counseling; 29.7% (5.5% of full sample) were placed in a separate classroom for students with emotional/behavioral problems; and 22.3% (4.1% of full sample) were placed in a separate school for students with emotional/behavioral problems (Table 1 and Appendix 1; totals sum to more than 100%, as some youth received services in more than one setting).

In a multivariate model (introducing sociodemographic factors, community mental health service use, as well as type number of DSM disorders), receipt of school counseling among

Table 1
Among respondents in the NCS-A (N = 6,483), percent receiving any lifetime mental health services in schools

	Any school service (n = 1,204)	Among those receiving school services		
		School-based counseling (n = 1,004)	Separate classroom (n = 357)	Separate school (n = 268)
	% (SE)	% (SE)	% (SE)	% (SE)
Age (years)				
13–14	18.6 (1.3)	89.0 (2.6)	24.3 (2.2)	15.3 (3.0)
15	19.0 (1.4)	84.9 (2.4)	36.4 (5.2)	20.1 (3.2)
16	18.0 (2.1)	88.3 (2.4)	24.4 (4.0)	28.4 (4.6)
17–18	21.6 (2.3)	78.2 (3.6)	41.1 (4.2)	30.6 (5.7)
Sex				
Female	16.8 (1.1)	91.5 (2.1)	20.6 (3.1)	17.1 (3.0)
Male	21.6 (1.5)	80.7 (2.3)	38.7 (3.5)	26.8 (4.4)
Race				
Latino	19.9 (2.2)	82.3 (4.0)	40.5 (7.1)	33.8 (8.4)
Black	21.7 (2.0)	84.5 (3.9)	47.3 (4.8)	36.1 (4.8)
Other race	21.1 (5.4)	78.7 (5.5)	26.3 (3.8)	15.5 (3.6)
White	18.4 (1.2)	86.8 (2.3)	24.8 (3.4)	17.0 (3.0)
Region				
Northeast	20.7(2.2)	91.1 (2.6)	25.3 (4.7)	10.6 (2.8)
Midwest	18.8 (2.1)	82.2 (4.5)	30.6 (3.7)	26.9 (6.5)
South	17.7 (1.5)	84.2 (2.5)	31.9 (3.8)	31.8(6.8)
West	21.0 (2.2)	85.0 (3.5)	34.8 (6.4)	16.0 (3.6)
Parents education				
Low	23.1 (2.7)	72.6 (4.1)	55.0 (4.5)	34.0 (5.3)
Mid-low	19.4 (1.7)	84.9 (2.9)	35.1 (4.1)	31.4 (5.1)
Mid-high	21.7 (2.2)	90.0 (2.7)	24.9 (3.3)	15.1 (3.5)
High	16.5 (1.3)	88.0 (2.2)	20.7 (3.3)	14.9 (2.8)
Bio parents				
0 bio parents	30.2 (2.5)	82.4 (3.3)	38.0 (4.2)	28.2 (3.7)
1 bio parents	28.2 (1.6)	87.9 (1.9)	31.3 (3.2)	23.7 (3.6)
2 bio parents	11.5 (.9)	82.4 (3.1)	27.6 (3.9)	18.6 (3.5)
Urbanicity				
Urban	20.9 (1.8)	87.7 (2.2)	34.3 (3.3)	22.0 (3.8)
Other metro	18.6 (1.4)	83.7 (3.0)	27.4 (3.2)	24.3 (4.7)
Rural	15.9 (1.6)	80.6 (5.1)	29.2 (4.1)	20.0 (3.6)
Learning disability				
Yes	40.9(2.6)	78.3 (2.9)	49.2 (4.0)	27.9 (3.8)
No	15.6 (1.0)	88.5 (2.0)	23.3 (3.3)	20.3 (3.2)
Community services				
Yes	63.4 (3.5)	80.9 (3.7)	51.1 (4.9)	44.9 (4.6)
No	17.9 (1.0)	85.8 (1.9)	28.8 (2.8)	20.1 (2.6)
Any disorder	28.6 (1.4)	86.0 (1.7)	30.3 (2.5)	24.4 (3.4)
Disorders				
Agoraphobia	44.9 (5.4)	94.3 (3.4)	25.9 (9.7)	17.7 (10.5)
Social phobia	27.7 (3.2)	87.9 (2.6)	24.7 (3.2)	16.0 (3.4)
Specific phobia	26.7 (1.9)	86.6 (2.1)	29.7 (3.9)	19.1 (2.9)
Panic disorder	30.8 (4.6)	87.4 (2.6)	19.9 (6.6)	9.4 (1.9)
IED	34.9 (2.7)	82.0 (3.3)	34.3 (5.3)	31.4 (3.6)
MDE/DYS	40.0 (2.3)	87.0 (1.9)	29.0 (2.8)	23.0 (4.3)
GAD	26.5 (4.8)	97.5 (.5)	33.3 (4.4)	45.0 (4.3)
PTSD	39.9 (5.1)	92.3 (2.1)	19.0 (5.1)	17.4 (6.0)
Separation anxiety	27.7 (3.2)	85.2 (3.1)	34.7 (5.5)	27.0 (4.2)
ADHD	53.7 (3.6)	81.0 (3.9)	46.9 (4.4)	33.6 (4.0)
ODD	45.2 (2.0)	84.5 (2.6)	37.6 (3.6)	32.4 (5.8)
Conduct disorder	57.1 (4.6)	84.6 (2.3)	48.5 (3.7)	43.1 (4.7)
Eating disorder	33.7 (4.5)	79.8 (2.9)	35.5 (5.0)	22.8 (2.9)
Alcohol dependence/abuse	38.6 (4.4)	83.4 (3.8)	22.7 (4.7)	26.0 (4.5)
Drug dependence/abuse	43.5 (4.0)	78.8 (2.6)	34.4 (4.4)	33.7 (5.0)
Bipolar disorder (I/II)	40.5 (4.0)	94.2 (1.3)	30.6 (5.8)	14.8 (2.9)
Count of disorders				
No disorder	7.9 (.7)	82.0 (3.3)	34.3 (7.6)	14.7 (3.6)
Exactly 1	16.5 (1.5)	87.4 (3.2)	19.9 (3.5)	14.1 (2.5)
Exactly 2	24.9 (3.2)	88.6 (2.7)	29.5 (5.6)	23.8 (5.6)
Exactly 3	36.7 (3.3)	89.1 (3.2)	30.6 (7.6)	25.2 (3.6)
Exactly 4	47.8 (4.4)	75.9 (4.2)	45.2 (4.8)	38.4 (8.7)
5 + disorders	51.8 (2.9)	86.4 (2.4)	32.4 (3.5)	26.5 (4.4)

Among those receiving any school services (n = 1,204), percent receiving school-based counseling, services in a separate classroom, and in a separate school.
ADHD = attention-deficit/hyperactivity disorder; GAD = generalized anxiety disorder; IED = intermittent explosive disorder; MDE/DYS = major depressive episode or dysthymic disorder; ODD = oppositional defiant disorder; PTSD = posttraumatic stress disorder; SE = standard error.

Table 2A
Associations of sociodemographic factors and disorders with receipt of school counseling, services in a separate classroom, and in a separate school, among those receiving school mental health services (N = 1,204)

	School counseling	Separate classroom	Separate school
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Age			
15	.8 (.6–1.1)	1.3 (.8–2.1)	.6 (.3–1.2)
16	.6[a](.5–.8)	.6 (.3–1.1)	2.6[a] (1.3–5.2)
17–18	.7[a] (.5–.9)	1.7[a] (1.1–2.7)	2.5[a] (1.3–4.8)
χ^2_3	19.3[a]	12.2[a]	15.9[a]
Sex			
Female	1.1 (.8–1.3)	.5[a] (.3–.9)	.6 (.4–1.1)
χ^2_1	.3	6.1[a]	2.5
Race			
Latino	.9 (.6–1.5)	1.2 (.6–2.4)	2.4[a] (1.2–4.8)
Black	1.0 (.7–1.5)	2.6[a] (1.4–5.1)	2.0 (1.0–5.0)
Other	.5[a] (.3–.9)	1.0 (.3–2.8)	1.0 (.4–2.4)
χ^2_3	7.8	9.8[a]	8.9[a]
Region			
Midwest	.9 (.7–.9)	1.0 (.6–1.6)	3.4[a] (1.2–9.5)
South	.7[a] (.5–.9)	.5 (.3–1.0)	3.4[a] (1.1–10.9)
West	1.0 (.8–1.4)	1.1 (.6–1.9)	3.7[a] (1.2–11.3)
χ^2_3	7.7	6.3	6.2
Urbanicity			
Other metro	1.2 (.9–1.5)	.7 (.4–1.1)	1.4 (.7–2.8)
Rural	1.2 (.8–1.9)	.9 (.6–1.5)	.8 (.3–2.0)
χ^2_2	1.3	2.1	2.3
Parent education			
<High school	.9 (.5–1.6)	3.1[a] (1.6–5.8)	2.4[a] (1.1–5.3)
High school	1.0 (.7–1.3)	1.6 (.9–2.9)	2.2 (1.0–4.6)
Some college	1.0 (.7–1.3)	.9 (.5–1.8)	.7 (.3–1.8)
χ^2_3	.1	24.8[a]	9.8[a]
Bio parents			
0 bio parents	1.5 (.5–4.4)	.3 (.0–2.4)	.4 (.1–1.3)
1 bio parent	1.2 (.9–1.4)	.9 (.7–1.3)	.9 (.5–1.5)
χ^2_2	2.0	1.5	2.6
Learning disability			
Yes	1.0 (.8–1.4)	2.0[a] (1.2–3.2)	1.4 (.8–2.5)
χ^2_1	.1	7.6[a]	1.4
Community services			
Yes	1.0 (.7–1.5)	2.6[a] (1.9–3.7)	2.9[a](1.7–4.7)
χ^2_1	.0	30.8[a]	16.2[a]

Analyses included 15 DSM-IV disorders and a count of number of disorders.
[a] Significant at the .05 level, two-sided test.

Table 2B
Associations of sociodemographic factors and disorders with receipt of school counseling, services in a separate classroom, and in a separate school, among those receiving school mental health services (N = 1,204)

	School counseling	Separate classroom	Separate school
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Disorders			
Agoraphobia	1.9[a] (1.1–3.4)	1.8 (.5–6.2)	.0[a] (.0–.2)
Social phobia	1.0 (.6–1.8)	.6 (.2–1.8)	1.8 (.6–5.4)
Specific phobia	1.0 (.7–1.3)	.7 (.3–1.4)	.7 (.3–1.8)
IED	1.2 (.8–1.8)	1.1 (.6–2.3)	1.1 (.4–2.8)
MDE/DYS	1.7[a] (1.2–2.5)	.5 (.2–1.1)	.9 (.2–3.1)
GAD	1.3 (.7–2.3)	1.2 (.1–17.7)	.1 (.0–1.3)
PTSD	2.2[a] (1.1–4.5)	.4 (.1–1.6)	.9 (.2–5.0)
Separation anxiety	.9 (.5–1.5)	.5(.2–1.2)	1.5 (.3–7.6)
ADHD	1.2 (.8–1.7)	1.5 (.9–2.5)	2.1 (.7–6.1)
ODD	1.3 (.7–2.3)	1.2 (.5–3.1)	3.8[a] (1.4–10.1)
Conduct disorder	1.7 (.8–3.3)	.6 (.2–1.5)	1.2 (.4–3.6)
Eating disorder	3.3 (.7–15.7)	1.2 (.4–3.3)	1.0 (.1–10.9)
Alcohol abuse/dependence	1.8 (.7–4.5)	.6 (.2–2.3)	1.1 (.3–3.8)
Drug abuse/dependence	.8 (.3–1.9)	.2[a] (.0–.6)	2.0 (.7–5.5)
Bipolar (I/II)	.9 (.5–1.6)	.9 (.3–2.5)	.7 (.1–3.7)
χ^2_{15}	34.0[a]	63.0[a]	55.7[a]
Count			
Exactly 2	.6 (.4–1.0)	1.7 (.8–3.6)	.5 (.1–2.9)
Exactly 3	.8 (.3–1.9)	3.6 (.9–14.5)	.4 (.0–4.2)
4+ disorders	.4 (.1–1.2)	7.5 (1.0–56.5)	.8 (.0–19.5)
χ^2_3	6.5	3.9	3.0

Analyses included sociodemographic factors.
ADHD = attention-deficit/hyperactivity disorder; GAD = generalized anxiety disorder; IED = intermittent explosive disorder; MDE/DYS = major depressive episode or dysthymic disorder; ODD = oppositional defiant disorder; PTSD = posttraumatic stress disorder; SE = standard error.
[a] Significant at the .05 level, two-sided test.

those receiving any school mental health services was significantly associated with younger age ($\chi^2_3 = 19.3$; $p < .001$; Table 2A and 2B). School counseling was also significantly associated with type of disorder ($\chi^2_{15} = 34.0$, $p = .004$), specifically students with agoraphobia (odds ratio [OR] = 1.9, confidence interval [CI] = 1.1–3.4), MDE/DYS (OR = 1.7, CI = 1.2–2.5), and PTSD (OR = 2.2, CI = 1.1–4.5) were more likely to report use of school counseling services than their peers.

Service receipt in a separate classroom was significantly associated with age ($\chi^2_3 = 12.2$, $p = .01$), gender ($\chi^2_1 = 6.1$, $p = .01$), race/ethnicity ($\chi^2_3 = 9.8$, $p = .02$), parent education ($\chi^2_3 = 24.8$, $p < .001$), having a learning disability ($\chi^2_1 = 7.6$, $p = .01$), and lifetime use of community-based mental health services ($\chi^2_1 = 30.8$, $p < .001$). Specifically, adolescents aged 17 to 18 years reported that they were more likely to have been placed in a separate classroom than 13- to 14-year-olds (OR = 1.7, CI = 1.1–2.7), and females were less likely to report service use in a separate classroom than males (OR = .5, CI = .3–.9). In addition, black adolescents were more likely to report services in a separate classroom than white students (OR = 2.6, CI = 1.4–5.0) as were youth whose parents completed less than high school (OR = 3.1, CI = 1.6–5.8), compared with those whose parents completed college. Youth with learning disabilities (OR = 2.0, CI = 1.2–3.2) and those who received community-based mental health services (OR = 2.6, CI = 1.9–3.7) were more likely to receive services in a separate classroom than their peers. Service use in a separate school was significantly associated with disorders type ($\chi^2_{15} = 63.0$, $p < .001$). Specifically, drug abuse/dependence had a significant negative association with service receipt in a separate classroom (OR = .2, CI = .0–.6).

Finally, service receipt in a separate school was similarly significantly associated with age ($\chi^2_3 = 15.9$, $p = .001$), race/ethnicity ($\chi^2_3 = 8.9$, $p = .03$), parent education ($\chi^2_3 = 9.8$, $p = .02$), and receipt of community-based mental health services ($\chi^2_1 = 16.2$, $p < .001$). Specifically, students aged 16 years (OR = 2.6, CI = 1.3–5.2) and those aged 17–18 years (OR = 2.5, CI = 1.3–4.8) more often reported service receipt in a separate school than those aged 13–14 years. Latinos were more likely to report service receipt in a separate school than their white peers (OR = 2.4, CI = 1.2–4.8). Youth whose parents had completed less than high school (OR = 2.4, CI = 1.1–5.3) were more likely to report service use in a separate school than those whose parents completed college. Furthermore, youth who received community-based mental health services were more likely to report service receipt in a separate school (OR = 2.9, CI = 1.7–4.7) than those who had not received community-based services. In addition, service use in a separate school was significantly associated with disorders type ($\chi^2_{15} = 55.7$, $p < .001$).

Table 3
Associations of sociodemographic factors and disorders with receipt of first school-based mental health services in a separate classroom or a separate school, as compared to those who only received school counseling in the first year of school service use (N = 1,204)

	First service use in separate classroom or school
	OR (95% CI)
Age (years)	
15	1.2 (.7–2.1)
16	1.5 (.9–2.7)
17–18	3.8[a] (2.3–6.2)
χ^2_3	29.0[a]
Sex	
Female	.5[a] (.3–.8)
χ^2_1	9.3[a]
Race	
Latino	2.3[a] (1.2–4.1)
Black	2.8[a] (1.6–5.1)
Other	2.1 (.6–7.2)
χ^2_3	18.2[a]
Region	
Midwest	1.5 (.8–2.7)
South	1.2 (.7–1.9)
West	1.3 (.8–2.2)
χ^2_3	2.9
Urbanicity	
Other metro	.8 (.5–1.3)
Rural	.9 (.4–1.9)
χ^2_2	1.3
Parent's education	
Less than high school	2.7[a] (1.2–5.7)
High shool	1.6 (1.0–2.6)
Some college	.7 (.3–1.6)
χ^2_3	11.9[a]
Bio parents	
0 bio parents	.2 (.0–1.5)
1 bio parent	.8 (.5–1.2)
χ^2_2	4.9
Learning disability	
Yes	1.7 (1.0–3.0)
χ^2_1	3.7
Community services	
Yes	3.1[a] (2.0–4.7)
χ^2_1	26.4[a]
Disorders	
Agoraphobia	.8 (.2–3.5)
Social phobia	.4 (.2–1.2)
Specific phobia	.5 (.2–1.2)
IED	1.0 (.5–2.0)
MDE/DYS	.3[a] (.1–.8)
GAD	.6 (.0–10.6)
PTSD	.2[a] (.0–.8)
Separation anxiety	.6 (.2–2.3)
ADHD	.9 (.5–1.8)
ODD	.9 (.4–1.6)
Conduct disorder	.3[a] (.1–.9)
Eating disorder	.4 (.1–2.0)
Alcohol abuse/dependence	.4 (.1–1.7)
Drug abuse/dependence	.7 (.2–2.5)
Bipolar (I/II)	.7 (.2–2.6)
χ^2_{15}	30.6[a]
Count	
Exactly 2	2.4 (.9–6.7)
Exactly 3	6.1[a] (1.4–26.9)
4+ disorders	31.3[a] (3.4–290.2)
χ^2_3	9.4[a]

[a] Significant at the .05 level, two-sided test. Analyses include sociodemographic factors.

Specifically, youth were more likely to receive services in a separate school when they met criteria for ODD (OR = 3.8, CI = 1.4–10.1), whereas adolescents with agoraphobia were less likely than their peers to receive services in separate schools (OR = .0, CI = .0–.2).

First entry into school service use

We next examined the receipt of services in separate classroom or school settings at the time at which school-based mental health services were first initiated. Initial service receipt in separate classroom or school settings was significantly associated with age ($\chi^2_3 = 29.0$; $p < .001$), gender ($\chi^2_1 = 9.3$, $p = .002$), race/ethnicity ($\chi^2_3 = 18.2$, $p < .001$), parent education ($\chi^2_3 = 11.9$, $p = .008$), and use of community-based mental health services ($\chi^2_1 = 26.4$, $p < .001$; Table 3). Adolescents aged 17–18 years were more likely to indicate initiation of mental health services in separate settings than those aged 13–14 years (OR = 3.8, CI = 2.3–6.2). Females were less likely to start services in a separate setting than males (OR = .5, CI = .3–.8). Latino (OR = 2.3, CI = 1.2–4.1) and black (OR = 2.8, CI = 1.6–5.1) youth were more likely to start services in a separate setting than their white peers. Children of parents who completed less than high school (OR = 2.7, CI = 1.2–5.7) were more likely to report starting services in a separate setting than those whose parents completed college. In addition, youth who received community-based mental health services were more likely to start services in a separate setting (OR = 3.1, CI = 2.0–4.7).

Both type of disorder ($\chi^2_{15} = 30.6$, $p = .01$) and number of disorder ($\chi^2_3 = 9.4$, $p = .02$) were associated with likelihood of initiating mental health services in a separate classroom or school setting. Specifically, MDE/DYS (OR = .3, CI = .1–.8), PTSD (OR = .2, CI = .0–.8), and CD (OR = .3, CI = .1–.9) were associated with decreased likelihood of initiating services in a separate setting. Meeting criteria for exactly three (OR = 6.1, CI = 1.4–26.9) or four or more disorders (OR = 31.3, CI = 3.4–290.2) was associated with increased likelihood of initiating services in a separate setting.

Discussion

Among U.S. youths receiving school-based mental health services, almost one-third reported that they received at least some of those services in a separate classroom and one-fourth in a separate school designated for students with psychiatric disorders. Several sociodemographic factors and types of disorders are differentially associated with the types of school-based services youth access. As noted previously, NCS-A data have been used to document that racial/ethnic disparities in mental health service access decrease in school settings [6]. However, results here indicate that this is the case only for school counseling services. This finding is consistent with prior research documenting that racial/ethnic minority students access school counseling services at higher rates than outpatient service use [3]. In contrast, black and Latino youth were more likely to report placement in separate classroom or school settings than their white peers, a disparity that persisted even after adjustment for sociodemographic factors, including parental education and

learning disabilities, use of community-based mental health services, and the type and number of lifetime mental disorders. Specifically, when compared with white students, black students were more often placed in separate classrooms and Latino youth were more often placed in separate schools. Although the reasons for this distinction between black and Latino students is unclear, this finding suggests a need for further research on pathways into different service settings. These findings are broadly consistent with some previous research using school administrative records that found racial/ethnic minority youth with psychiatric disorders were more likely than their white peers to receive services in separate educational settings [29,30]. In addition, results of the current study indicate that among those receiving any school-based service, both Latino and black students were more likely to be placed *initially* in a separate classroom or school setting than their white peers. This finding raises questions about whether school staff provide racial/ethnic minority students a continuum of supports, in general education settings, before providing them services in settings in which they are separated from their peers [31].

Several other sociodemographic associations are worth noting. Low parental education was also consistently associated with service receipt in separate settings, as well as initial placement in a separate setting. A prior NCS-A study found that low parental education was associated with decreased access to specialty mental health services, but not the use of school mental health services [6]. The finding here that parent education is specifically associated with placement in separate settings, but not school counseling services generally, adds nuance to these prior results. Together with the results for black and Latino youth, these findings suggest that some of the most underserved youth in U.S. school settings are more likely than their peers to receive mental health services in separate classroom or school settings. In addition, males were more likely to receive mental health services in a separate classroom than females. Prior findings from the NCS-A study indicated that males were more likely to receive services in schools than females, in general [6]. The present study suggests that this distinction is specific to receiving services in a separate classroom. Youth identified as having a learning disability were also more likely than their peers to receive services in a separate classroom setting, a finding consistent with data from the U.S. Department of Education on educational placement among youth with learning disabilities [32]. Finally, youth who received community-based mental health services at some point in their lifetime were significantly more likely to receive school services in separate classroom and school settings. It is possible that the same youth who are placed in more restrictive educational placements because of concerns about significant emotional or behavioral challenges are also more likely to generate referrals for community-based mental health treatment and to, therefore, receive services in multiple sectors.

Furthermore, we found several disorder-related associations with type of school mental health services, which, to our knowledge, have not been previously examined. Specifically, rates of school counseling services were higher among youth with agoraphobia, MDE, and PTSD, suggesting that these internalizing disorders may lead to referrals to meet with a school counselor. In contrast, youth with ODD were more likely to report placement in separate school settings. The finding that ODD was associated with separate placement is consistent with research finding that school staff identify aggressive behaviors as the most important factor in determining student placement in separate classroom and school settings [33]. Notably, we also found that youth with agoraphobia had *decreased* rates of placement in separate school settings, which might mean that schools are able to effectively serve youth with agoraphobia in less restrictive settings. Interestingly, the results of analyses investigating the setting in which services were first received indicate that youth with MDE/DYS, PTSD, and CD were less likely than their peers without those disorders to initiate services in a separate setting. The findings for MDE/DYS and PTSD were expected, given that youth with these internalizing disorders are often provided school counseling services. However, the results for CD were counter to our expectations and suggest that schools begin by providing school counseling services for these youth, as well. Finally, our results indicate that youth with multiple disorders are more likely to begin school-based services in separate classroom or school settings. This result suggests that disorder comorbidity, a marker of severity, is related to the intensity of services, as we would expect.

The importance of educational placement for youth has been well-documented, with studies finding that students in separate educational placements are less likely than their peers to be taught by fully qualified teachers and have more limited academic and behavioral progress [13–18]. Solutions to disparities in educational placement are, of course, complex. NeMoyer et al. [34] presented current study results to groups of stakeholder (e.g., staff at community-serving organizations and state-level policymakers) and asked them to generate solutions. Recommendations included school implementation of programs aimed to identify and refer youth early in the course of disorders, providing training to improve the capacity of school staff to meet student emotional and behavioral needs in general education settings, and developing data-sharing systems across agencies with a particular focus on systems that could disaggregate service use data by race and ethnicity. The importance of intervening to address these disparities should also be considered in terms of their impact on educational attainment and the substantial evidence suggesting that separate educational placements can lead to school drop-out and poor academic attainment.

Results should be interpreted in light of several limitations. First, NCS-A measures of school service receipt are limited to a series of single questions about whether youth received counseling services or mental health services in separate classrooms or schools. These questions do not reflect variability in services (e.g., individual vs. group counseling and use of evidence-based materials), the process by which placement was determined, or the duration of services. Second, the NCS-A also includes limited information on academic performance and identification for special education services, which have been found to be important considerations in other research [35–37]. However, we include data on the presence of learning disabilities here. Third, although the NCS-A includes data on parental education, it only assesses current SES, and therefore, we could not use SES data in this article because of our focus on lifetime report of educational placement. Fourth, respondents were asked to retrospectively recall and date the first onset of disorders and service receipt. Although the good concordance of the CIDI with a structured clinical interview reduces concerns about symptom recall, bias could have influenced prevalence estimates and age of onset reports for service use. In most cases, agreement between parent

and child report was only moderate. Fifth, the NCS-A undersampled several segments of the adolescent population including those who were homeless or did not speak English. Sixth, several cells had a small number of participants, particularly among those receiving services in separate school setting. This poses challenges when investigating racial/ethnic differences, even in a large nationally representative survey such as the NCS-A.

Finally, data were collected between 2001 and 2004. Since that time, there have been changes in educational policy and practice designed to support students in general education settings. Passage of the reauthorization of the Individuals with Disabilities Education Act in 2004 requires, among other things, that states collect and examine data on the disproportionate representation of racial/ethnic minority students in different educational settings. Data from the U.S. Department of Education indicates that 34.7% of students identified as having an emotional disturbance in 2005–2006 spent most of their time (80% or more) in a mainstream classroom, and this increased to 47.1% in 2015–2016 [32]. However, black and Latino students continue to spend less time in mainstream classes and to receive special education services under the emotional disturbance category at a higher rate than white students [8,38]. In addition, although there is a general movement toward inclusion of students with disabilities and declining use of separate classroom and school settings, these changes have been slower for students with emotional disturbance than in other disability categories [39].

Unfortunately, the NCS-A is still the most recent U.S. nationally representative data on youth mental disorders. Until new data are available, this study offers one of the best opportunities to answer questions about educational placements for students with psychiatric disorders. If newer nationally representative data on psychiatric disorders become available in the future, these data can provide a comparison point. We see an important need for updated nationally representative data on youth with psychiatric disorders and their use of school mental health services. Such data would ideally include measures of school functioning (both academic and social), which could provide key information about which services in schools lead to improved outcomes for youth.

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Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jadohealth.2020.02.016.

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