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Identifying Emotional and Behavioral Problems in Children Aged 4–17 Years: United States, 2001–2007

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Abstract

Objectives—This report examines two measures that identify children with emotional and behavioral problems: high scores based on questions in the brief version of the Strengths and Difficulties Questionnaire (SDQ) and a single question about serious (definite or severe) overall emotional and behavioral difficulties. Children were classified into four groups, those with: only high scores on the brief SDQ, only serious overall difficulties, both high scores on the brief SDQ and serious overall difficulties, and neither high scores on brief SDQ nor serious overall difficulties. Children’s characteristics, conditions, and service use in these four groups were compared.

Methods—Data from the 2001–2007 National Health Interview Survey identified the emotional and behavioral problems, characteristics, conditions, and service use of children aged 4–17 years.

Results—Approximately 7% of children had either high scores on the brief SDQ or serious overall difficulties, with 2% having only high scores on the brief SDQ, 3% having only serious overall difficulties, and 2% having both high scores on the brief SDQ and serious overall difficulties. Characteristics of the three groups of children identified with emotional and behavioral problems differed from each other and from children without problems. Children in each of the groups with emotional and behavioral problems, compared with children without problems, were more likely to have developmental conditions and to have used services. Additionally, children with serious overall difficulties (either with or without high scores on the brief SDQ) were more likely to have developmental conditions, receive special education, and use mental health services than children with only high scores on the brief SDQ.

Keywords: Strengths and Difficulties Questionnaire • child mental health • special education

Introduction

Emotional and behavioral problems are among the most prevalent chronic health conditions of childhood and often

have serious negative consequences for a child’s academic achievement and social development (1–5). Parents are frequently the first adults to identify that

a child has a serious emotional or behavioral problem and they play a major role in arranging diagnostic and treatment services for children (6). Many epidemiologic studies of the emotional and behavioral problems of children have relied on parent responses to survey questions to identify children at high risk of these problems (7). Surveys that collect information from parents also have the advantage of using a respondent who is knowledgeable about other aspects of a child’s life, including the child’s sociodemographic characteristics, diagnosed developmental conditions, and use of educational and health care services.

The Strengths and Difficulties Questionnaire (SDQ), developed and copyrighted by Robert Goodman, is a screening tool for identifying emotional and behavioral problems in children. This screening tool has been used for epidemiologic studies in over 40 countries (<http://www.sdqinfo.org>). The version of the SDQ based on parent reports was selected by a panel of mental health experts for inclusion in the National Health Interview Survey (NHIS) because it is a brief instrument that can be used to collect information about the symptoms of both internalizing and externalizing child mental health problems over a wide age



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range (4–17 years) (8). The extended version of the SDQ (approximately 30 questions) was included in the 2001, 2003, and 2004 NHIS. The extended version of the SDQ includes questions for four subscales that measure a child's emotional and behavioral symptoms in four problem areas (emotions, conduct, hyperactivity or inattention, and peer relations), and a section with questions covering the duration of a child's symptoms and the types of impairment associated with these symptoms. A brief version of the SDQ was included in the NHIS in 2002, 2005, 2006, 2007, and 2010. The brief SDQ contains a subset of five symptom questions drawn from all the questions comprising the four subscales in the extended version of the SDQ. The brief version of the SDQ also includes a single question about the overall severity of a child's emotional and behavioral problems.

This report examines two measures of emotional and behavioral problems available from 7 contiguous years of the NHIS (2001–2007): 1) high scores derived from the symptom questions in the brief SDQ and 2) responses of serious (definite or severe) difficulties to the single question on overall difficulties. Data are presented that describe the prevalence of emotional and behavioral problems as defined in three ways: having only high scores on the brief SDQ, having only serious overall difficulties, and having both high scores on the brief SDQ and serious overall difficulties. The sociodemographic characteristics, diagnosed developmental conditions, and service use of all children with and without emotional and behavioral problems are also compared.

Methods

Data source

The information presented in this report is based on questions from the Family Core and Sample Child Core components of the NHIS (http://www.cdc.gov/nchs/nhis/quest_data_related_1997_forward.htm). The NHIS is a household survey conducted by the Centers for Disease Control and

Prevention's National Center for Health Statistics and is fielded continuously throughout the year. The survey involves interviews of a nationally representative sample of the civilian noninstitutionalized population of the United States. Some health and demographic information is collected for all household members. Additional detailed health-related information is collected for one randomly selected child (the "sample child") in each family that includes children 0–17 years. Information about the sample child is provided by an adult, usually a parent, who is knowledgeable about the child's health. A detailed description of the NHIS sample design and the survey questionnaires for specific years are available from: http://www.cdc.gov/nchs/nhis/quest_data_related_1997_forward.htm.

Between 2001 and 2007, the NHIS included both measures of emotional and behavioral problems used in this analysis—high scores on the brief SDQ and serious overall difficulties. In 2008 and 2009, only one of the measures, serious overall difficulties, was included in the NHIS. As a result, this report combines data from 7 contiguous years (2001–2007). Between 2001 and 2007, the annual number of interviews completed for all sample children aged 0–17 years in the NHIS varied from 13,579 in 2001 to 9,417 in 2007. The final annual sample child response rate ranged from 77% to 81%. This rate also takes into account household and family nonresponse. The procedures used in the calculation of final annual sample child response rates for specific years are described in the Survey Description Document available from: http://www.cdc.gov/nchs/nhis/quest_data_related_1997_forward.htm.

Measurement of emotional and behavioral problems

Emotional and behavioral problems of children aged 4–17 years were identified using two measures from the brief SDQ in the 2001–2007 NHIS: high scores derived from the five symptom questions in the brief SDQ and serious overall difficulties based on a single

question about the severity of the child's problems in the areas of emotions, concentration, behavior, or being able to get along with other people. In the initial section of this report the two measures of emotional and behavioral problems (high scores on the brief SDQ and serious overall difficulties) are examined separately. In the remainder of the report, the two measures are used to create four mutually exclusive groups of children: those with only high scores on the brief SDQ, those with only serious overall difficulties, those with both high scores on the brief SDQ and serious overall difficulties, and those with neither high scores on the brief SDQ nor serious overall difficulties. For the purpose of conciseness in the text, tables, and figures, the term "both" is used when a parent reported both high scores on the brief SDQ and serious overall difficulties, and "neither" when a parent reported neither high scores on the brief SDQ nor serious overall difficulties.

High scores on the brief SDQ

were defined as a score of 6 or more based on parent's responses to the five symptom questions in the brief SDQ. The parent was asked the following questions: *"I am going to read a list of items that describe children. For each item, please tell me if it has been: not true, somewhat true, or certainly true for (sample child) during the past 6 months. [Sample child]: 1) Is generally well behaved, usually does what adults request, 2) has many worries, or often seems worried, 3) is often unhappy, depressed, or tearful, 4) gets along better with adults than with other children/youth, and 5) has good attention span, sees chores or homework through to the end."* Responses to these questions in the SDQ were coded 0= "not true," 1= "somewhat true," and 2= "certainly true." Responses to all questions were scored 0, 1, 2, so that a higher score indicated higher risk of emotional and behavioral problems.

In a previous validation study of mental health indices in the NHIS, Kessler and colleagues found that high scores (6 or more) based on responses to the five symptom questions in the brief SDQ predicted serious mental

health disorders among adolescents, which had been identified independently using the Schedule for Affective Disorders and Schizophrenia in School-Age Children (K-SADS) (9). When a cut-off score of 6 or more on the brief SDQ was used, there was also good individual-level concordance between the results on the K-SADS and high scores on the brief SDQ.

Serious overall difficulties were based on parents' responses to the following question: *“Overall, do you think that [sample child] has any difficulties in one or more of the following areas: emotions, concentration, behavior, or being able to get along with other people?”* Response options were 1) “no”; 2) “yes, minor difficulties”; 3) “yes, definite difficulties”; and 4) “yes, severe difficulties.” Children whose parents responded “yes, definite difficulties” or “yes, severe difficulties” were defined as having serious overall difficulties.

Bourdon and colleagues, using data from the extended version of the SDQ in the 2001 NHIS, examined parent reports of serious overall difficulties as a scoring method for identifying children at high risk of serious mental health problems and found significant associations between serious overall difficulties and use of mental health and special education services (8). These results were interpreted as evidence that the measure of serious overall difficulties is an effective and efficient screener for child and adolescent mental health problems in the United States. Additional analyses of serious overall difficulties using results from the 2001–2003 NHIS also reported associations between serious overall difficulties and use of mental health and special education services (10).

Sociodemographic characteristics

Other variables used in the analysis as covariates included: child's sex, age group (4–7, 8–10, 11–14, and 15–17 years), Hispanic origin and race [and language of interview for Hispanic children] (Hispanic [English language interview], Hispanic [Spanish language

interview], non-Hispanic black, non-Hispanic white, non-Hispanic other races); family structure (mother-only, two-parent, other family types); family income as a percent of the poverty level for families of given sizes and composition (below 100%, 100%–199%, 200%–399%, and 400% or more of the poverty level), and health insurance status at the time of interview (private [also includes military coverage], Medicaid [also includes CHIP, Medicare, a state-sponsored health plan, or another government program], uninsured). Children with both private and Medicaid coverage were categorized as having private coverage. The language of interview for Hispanic children was added to the race and ethnicity variable as a measure of acculturation.

Diagnosed developmental conditions and use of educational and health care services

Diagnosed developmental conditions were identified by asking a parent whether a doctor or health professional had ever told the parent that the child had any of the following specific conditions: attention deficit hyperactivity disorder, intellectual disability (mental retardation or other developmental delay), or learning disability. Use of special education was measured by asking a parent if a child was receiving special education services. Use of health care services during the past 12 months was assessed by asking if a parent had seen or talked to a general doctor about the child's emotional or behavioral problems or if a parent had seen or talked to a mental health professional about the child's health (see “Technical Notes” for specific wording of questions about developmental conditions and use of services).

Statistical analysis

Because of the small annual variation in each of the measures of emotional and behavioral problems, data from the 2001–2007 NHIS were combined to increase the reliability of

estimates. Among 63,037 sample children aged 4–17 years in the 2001–2007 NHIS, 1,804 (3%) children were missing data for the measures of emotional and behavioral problems. Item nonresponse rates for other variables in the analysis were less than 1%–2% with the exception of family income that was missing for more than 25% of children aged 4–17 years (see the “Technical Notes” for a description of item nonresponse and multiple imputation of family income). The analyses in this report were based on data from 61,233 interviews about sample children aged 4–17 years from 2001 through 2007, which collected complete information for all variables used to identify emotional and behavioral problems. The children with emotional and behavioral problems included 1,411 children with only high scores on the brief SDQ, 1,841 children with only serious overall difficulties, and 1,189 children with both high scores on the brief SDQ and serious overall difficulties.

All estimates were calculated using weighted data and are representative of the U.S. noninstitutionalized population of children aged 4–17 years. Average annual estimates of the percentage of children with emotional and behavioral problems were calculated using data for the time period 2001–2007. The estimates and associated standard errors shown in this report were generated using SUDAAN version 10, a software package designed to account for the complex design of the NHIS sample (11). Multinomial logistic regression (MULTILOG procedure in SUDAAN) was used to examine the adjusted association between each of the child's sociodemographic characteristics and the three categories of emotional and behavioral problems as defined by: only high scores on the brief SDQ, only serious overall difficulties, and both high scores on the brief SDQ and serious overall difficulties. Model-adjusted risk ratios were estimated for the three categories of children with emotional and behavioral problems compared with children with no problems using generalized logit models for nominal responses. MULTILOG calculates model-adjusted risk ratios

based on the predicted marginals. The multinomial regression analysis excluded an additional 253 children due to missing data on covariates.

Comparisons of estimates are based on two-tailed significance tests at the 0.05 level without any adjustments for multiple comparisons. Terms such as “greater than” and “less than” indicate a statistically significant difference. Terms such as “similar” or “no difference” indicate that the estimates being compared were not significantly different. Lack of comment regarding the difference between two estimates does not mean that the difference was tested and determined not to be significant. Because of the cross-sectional nature of the data collected in the NHIS, an association between variables does not indicate a causal connection. More information concerning the data source and statistical analysis can be found in the “Technical Notes.”

Results

Trends in high scores on the brief SDQ and trends in serious overall difficulties

The prevalence of high scores on the brief SDQ for children aged 4–17 years declined slightly during this 7 year period ($b=-0.03$, $se=0.01$, $p<0.05$) (Figure 1 and Table 1). However, the downward trend was not significant among children aged 4–10 or 15–17 years. Among children aged 11–14, the downward trend had borderline significance ($b=-0.05$, $se=0.02$, $p=0.05$). The prevalence of serious overall difficulties showed no trend and fluctuated around 5% during the 7 year period.

Prevalence of high scores on the brief SDQ and prevalence of serious overall difficulties

From 2001 through 2007, the average annual prevalence of emotional and behavioral problems as measured by high scores on the brief SDQ and serious overall difficulties was 4.3% and 5.1%, respectively (Table 2). The patterns of associations between each of

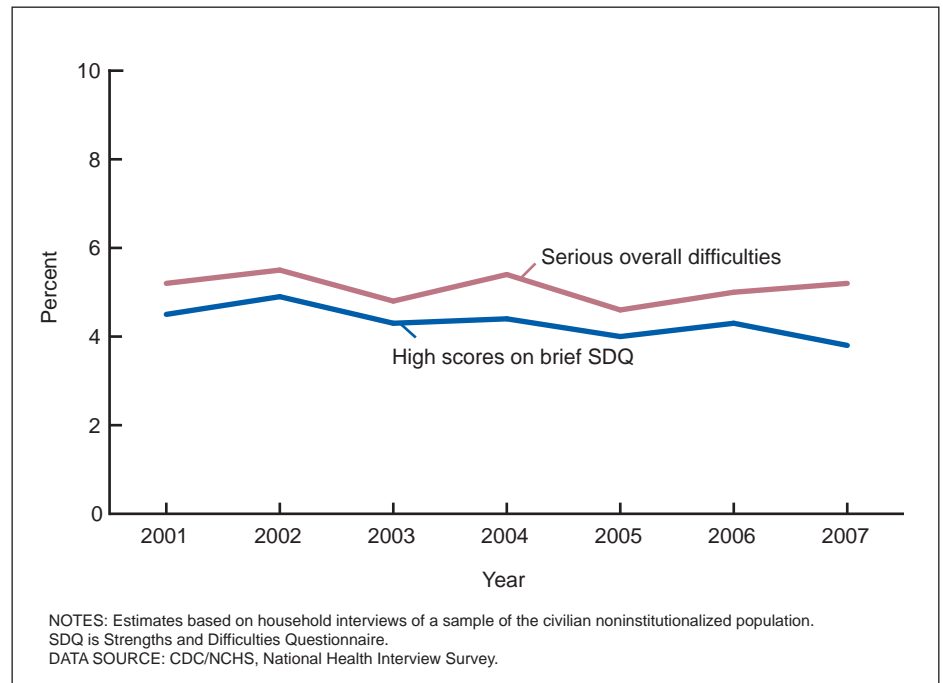


Figure 1. Prevalence of high scores on the brief SDQ and serious overall difficulties among children aged 4–17 years, by year: United States, 2001–2007

these measures of emotional and behavioral problems and selected sociodemographic characteristics were similar. Both measures of emotional and behavioral problems showed a lower prevalence of difficulties among younger children aged 4–7 years compared with older children aged 8–17 years. Both measures showed a higher percentage of male children with emotional and behavioral problems than female children. The prevalence of high scores on the brief SDQ was 4.8% among males compared with 3.7% among females and the prevalence of serious overall difficulties was 6.3% among males compared with 3.8% among females.

For both measures of problems, the lowest prevalence was observed among Hispanic children whose parents were interviewed in Spanish, 3.0% for high scores on the brief SDQ and 2.5% for serious overall difficulties (Table 2). The prevalence of high scores on the brief SDQ was similar among non-Hispanic white children and Hispanic children whose parents were interviewed in English. Compared with non-Hispanic white children, a higher percentage of

non-Hispanic black children had high scores on the brief SDQ. The prevalence of serious overall difficulties did not vary between non-Hispanic white children and non-Hispanic black children.

For both measures, the prevalence of emotional and behavioral problems among children in mother-only families was twice the percentage observed in two-parent families (Table 2). Each of the measures of problems also showed a negative association with the child’s family income as a percent of the poverty level. The prevalence of high scores on the brief SDQ ranged from 7.6% of children with family income below 100% of the poverty level to 2.1% among the most affluent children (family income 400% or more of the poverty level). Similarly, the prevalence of serious overall difficulties varied from 7.3% of children with family income below 100% of the poverty level to 3.5% of the most affluent children. The prevalence of children with problems identified by each of the measures was twice as high for children with Medicaid compared with children with private health insurance. The

prevalence of high scores on the brief SDQ among uninsured children (4.8%) was higher than the prevalence among privately insured children (3.1%), but lower than the prevalence among children with Medicaid coverage (7.5%). In contrast, the prevalence of serious overall difficulties among uninsured children (4.3%) was similar to the prevalence among privately insured children (4.0%), but lower than the prevalence among children with Medicaid coverage (8.3%).

Prevalence of emotional and behavioral problems identified by only high scores on the brief SDQ, only serious overall difficulties, and both

Approximately 7.4% of all children were rated as having either high scores on the brief SDQ or serious overall difficulties. Among all children, 2.2% had only high scores on the brief SDQ, 3.1% had only serious overall difficulties, and 2.1% had both high scores on the brief SDQ and serious

overall difficulties (Figure 2 and Table 3).

For each of the three categories of emotional and behavioral problems, the prevalence was lower among the youngest children (4–7 years) compared with the oldest children (15–17 years) (Figure 3 and Table 3). The prevalence of only high scores on the brief SDQ was 1.7% among the youngest children compared with 2.6% among the oldest children. Similarly, the prevalence of only serious overall difficulties was 2.5% among the youngest children compared with 3.3% among the oldest children. The prevalence of both high scores on the brief SDQ and serious overall difficulties ranged from 1.1% among the youngest children to 2.7% among the oldest children.

Differences between males and females varied depending on the category of problems (Figure 4 and Table 3). The prevalence of only high scores on the brief SDQ was similar for males and females, 2.3% and 2.1%, respectively. However, the prevalence of serious overall difficulties, either with or without high scores on the brief SDQ, was higher for males than females. The

prevalence of serious overall difficulties without high scores on the brief SDQ was 3.9% among males and 2.2% among females. The prevalence of serious overall difficulties with high scores on the brief SDQ also varied for males and females (2.5% and 1.6%, respectively).

The prevalence of emotional and behavioral problems varied by race and ethnicity and language of interview among the three groups of children identified by high scores on the brief SDQ and serious overall difficulties (Figure 5 and Table 3). Non-Hispanic black children, compared with non-Hispanic white children, had a higher prevalence of only high scores on the brief SDQ (3.0% and 2.0%, respectively), but a similar prevalence of only serious overall difficulties (3.5% and 3.2%, respectively) and a similar prevalence of both high scores on the brief SDQ and serious overall difficulties (2.2% for each group). In contrast, Hispanic children with Spanish language interviews, compared with non-Hispanic white children, had a similar prevalence of only high scores on the brief SDQ (2.3% and 2.0%, respectively), but a lower prevalence of only serious overall difficulties (1.8% and 3.2%, respectively) and a lower prevalence of both high scores on the brief SDQ and serious overall difficulties (0.7% and 2.2%, respectively).

The prevalence of emotional and behavioral problems was approximately twice as high among children in mother-only families, compared with two-parent families, regardless of the category of problems (Figure 6 and Table 3). Similarly, low family income was associated with a higher prevalence of emotional and behavioral problems across all three categories of children with problems (Figure 7 and Table 3). The prevalence of high scores on the brief SDQ ranged from 4.1% among children with family income below 100% of the poverty level to 1.0% among children in the most affluent families (400% or more of the poverty level). The prevalence of both high scores on the brief SDQ and serious overall difficulties also showed a similar

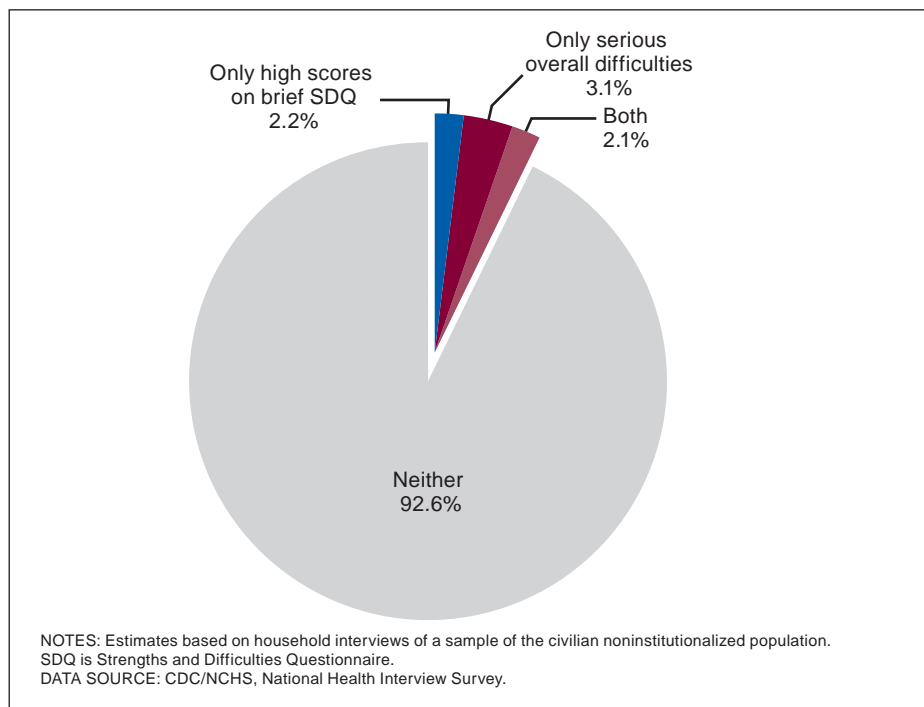


Figure 2. Prevalence of emotional and behavioral problems (only high scores on the brief SDQ, only serious overall difficulties, both, and neither) among children aged 4–17 years: United States, average annual estimates for 2001–2007

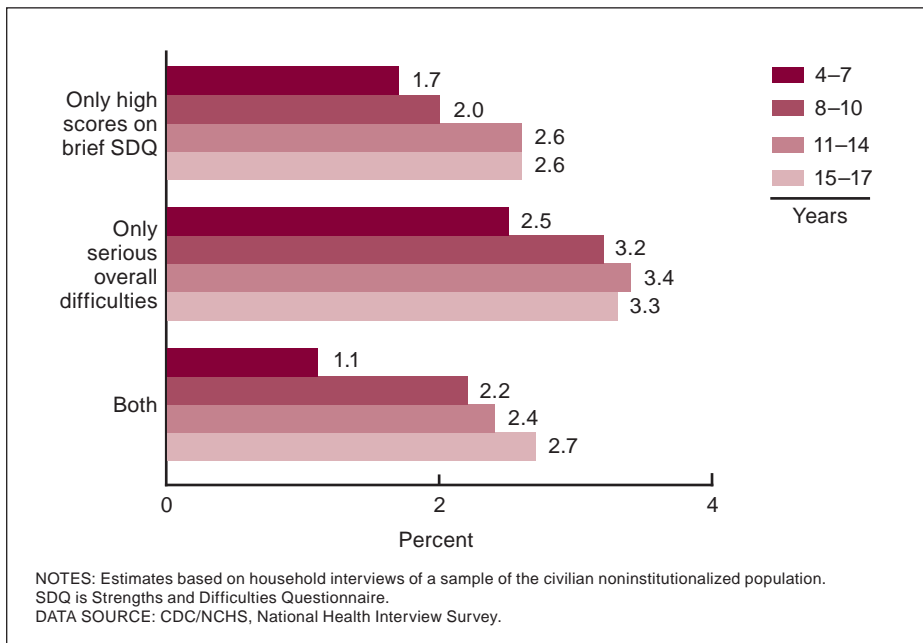


Figure 3. Prevalence of three categories of emotional and behavioral problems among children aged 4–17 years, by age group: United States, average annual estimates for 2001–2007

category of problems (Figure 8 and Table 3). For example, the prevalence of both high scores on the brief SDQ and serious overall difficulties was 3.7% among children covered by Medicaid and 1.5% among children covered by private insurance. Uninsured children, compared with children with private health insurance coverage, had a higher prevalence of only high scores on the brief SDQ (3.0% and 1.5%, respectively). The prevalence of only serious overall difficulties was similar among uninsured children and children with private health insurance coverage (2.6% for each coverage group). The prevalence of both high scores on the brief SDQ and serious overall difficulties was also similar among uninsured children and children with private health insurance coverage (1.8% and 1.5%, respectively).

Adjusted risk of three categories of emotional and behavioral problems (only high scores on the brief SDQ, only serious overall difficulties, and both)

Table 4 summarizes the results from a multinomial logistic regression that estimates the adjusted association of selected characteristics and the risk of emotional and behavioral problems as indicated by: only high scores on the brief SDQ, only serious overall difficulties, and both. Family income was associated with having only a high score on the brief SDQ. Among children whose family income was below 100% of the poverty level, the risk of having only a high score on the brief SDQ was 2.6 times the risk among children whose family income was 400% or more of the poverty level. Among children whose family income was 100%–399% of the poverty level, the risk of having only a high score on the brief SDQ was approximately twice the risk of children whose family income was 400% or more of the poverty level.

After adjustment for other sociodemographic characteristics, the risk factors associated with having only serious overall difficulties included being a male and having Medicaid

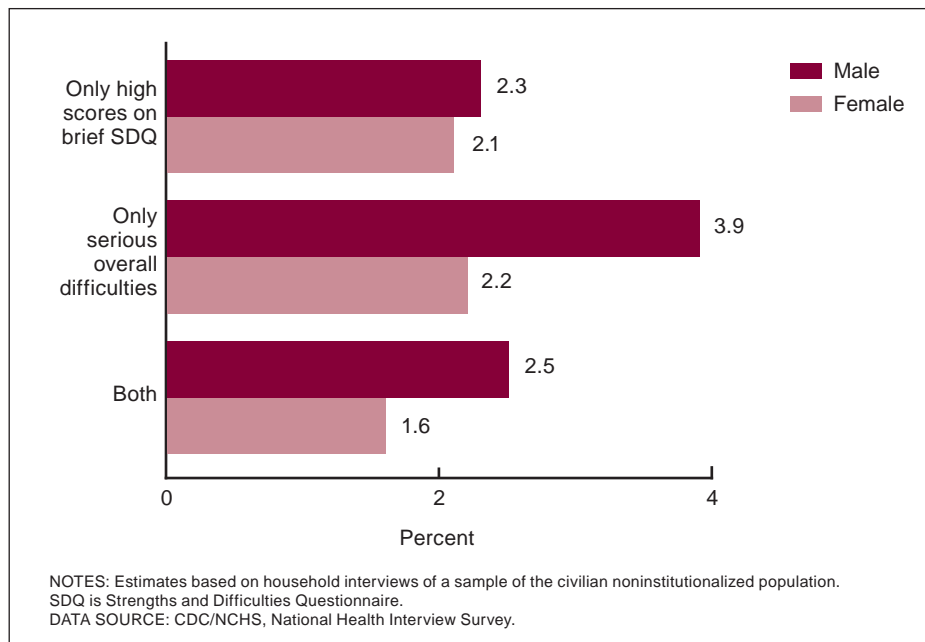


Figure 4. Prevalence of three categories of emotional and behavioral problems among children aged 4–17 years, by sex: United States, average annual estimates for 2001–2007

discrepancy between children with family income below 100% of the poverty level and those with income 400% or more of the poverty level (3.6% and 1.1%, respectively). The prevalence of only serious overall difficulties ranged from 3.7% to 2.5%

for poor children and the most affluent children, respectively.

Children, who had Medicaid coverage at the time of the interview, compared with children with private health insurance coverage, had a higher prevalence of problems regardless of the

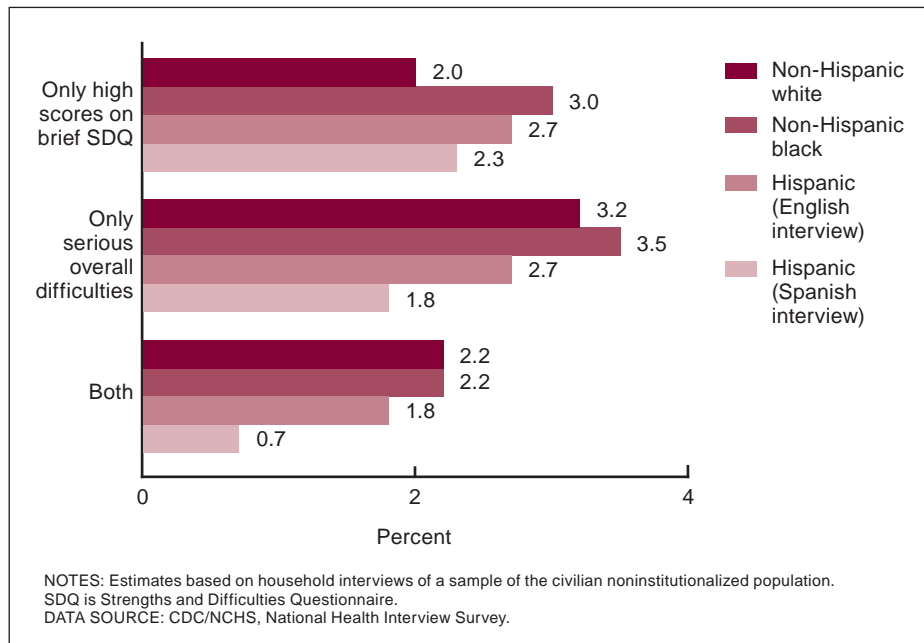


Figure 5. Prevalence of three categories of emotional and behavioral problems among children aged 4–17 years, by race and ethnicity and language of interview: United States, average annual estimates for 2001–2007

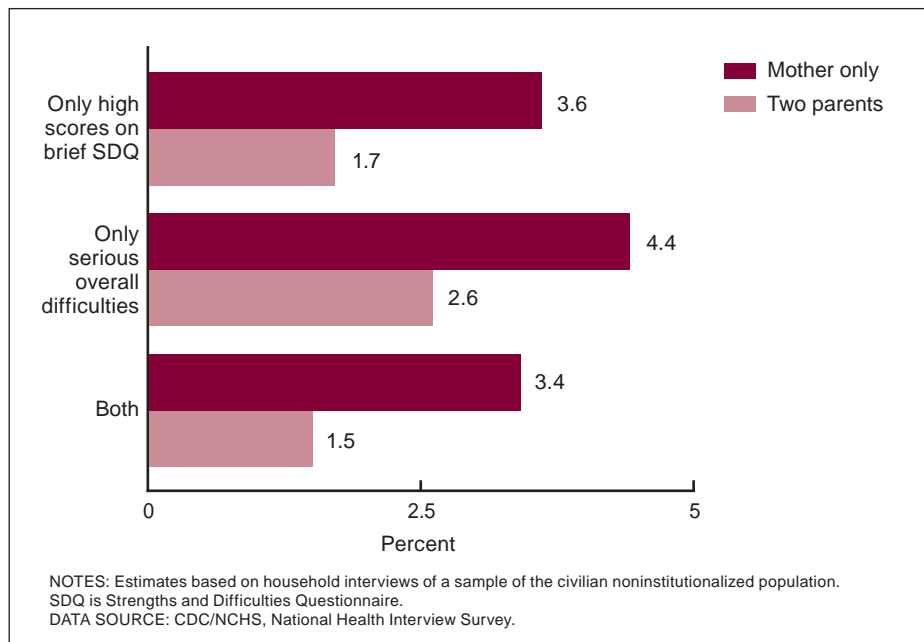


Figure 6. Prevalence of three categories of emotional and behavioral problems among children aged 4–17 years, by family structure: United States, average annual estimates for 2001–2007

coverage. The risk factors associated with having both high scores on the brief SDQ and serious overall difficulties included several sociodemographic characteristics: being

a male, living in a mother-only family, having a family income less than 400% of the poverty level, and having Medicaid coverage.

Ever diagnosed selected developmental conditions among children with and without emotional and behavioral problems

Among children with only high scores on the brief SDQ, 21.3% had ever been diagnosed with ADHD, 23.4% with learning disability, and 2.0% with intellectual disability (Figure 9 and Table 5). Among children who had serious overall difficulties, either with or without high scores on the brief SDQ, an even higher percentage of children were reported to have ever been diagnosed with ADHD, learning disability, or intellectual disability compared with children with only high scores on the brief SDQ. Among children with only serious overall difficulties, 49.8% had ever been diagnosed with ADHD, 44.9% with learning disability, and 6.7% with intellectual disability. Among children with both high scores on the brief SDQ and serious overall difficulties, 57.9% had ever been diagnosed with ADHD, 49.1% with learning disability and 7.1% with intellectual disability. A higher prevalence of diagnosed developmental conditions was found among children with serious overall difficulties (either with or without high scores on the brief SDQ) compared with those with only high scores on the brief SDQ. This pattern was similar among both younger (4–10 years) and older (11–17 years) children.

Each specific diagnosed developmental condition (ADHD, learning disability, and intellectual disability) was more prevalent among children with problems compared with children without problems (Figure 9 and Table 5). Among children aged 4–17 years without problems (neither high scores on the brief SDQ nor serious overall difficulties), 4.6% had ever been diagnosed with ADHD, 5.6% with learning disability, and only 0.4% with intellectual disability. Among children without problems, the prevalence of diagnosed conditions was generally higher among older (11–17 years)

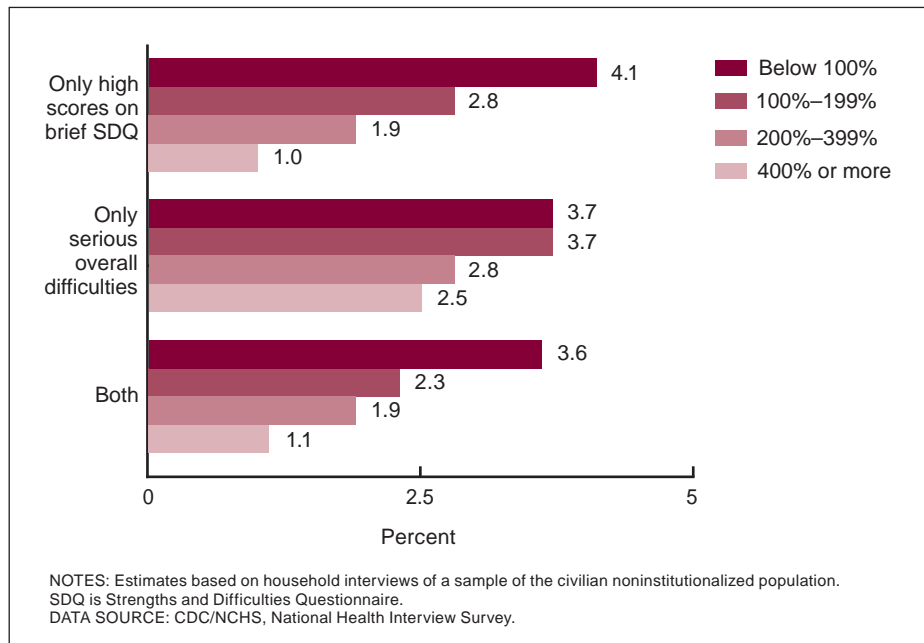


Figure 7. Prevalence of three categories of emotional and behavioral problems among children aged 4–17 years, by family income as a percent of poverty level: United States, average annual estimates for 2001–2007

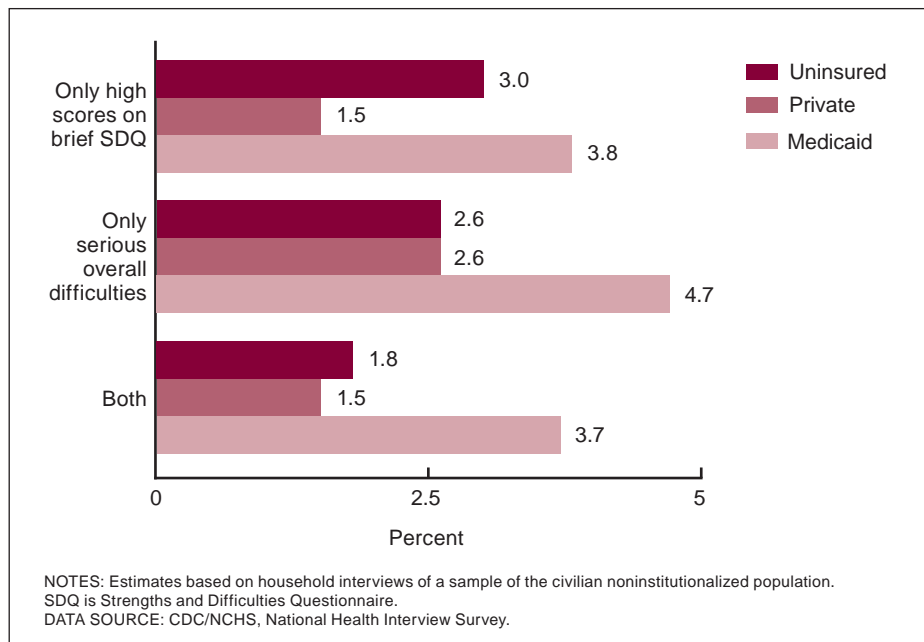


Figure 8. Prevalence of three categories of emotional and behavioral problems among children aged 4–17 years, by health insurance coverage: United States, average annual estimates for 2001–2007

compared with younger (4–10 years) children.

Use of educational and health care services among children with and without

emotional and behavioral problems

Among children with only high scores on the brief SDQ, 18.2% were currently enrolled in special education, 16.9% had a parent who had talked to a

general doctor about the child’s mental health problems, and 24.9% had a parent who had consulted a mental health professional (Figure 10 and Table 6). Among children who had serious overall difficulties either with or without high SDQ scores, an even higher percentage of children were reported to be currently enrolled in special education or had a parent who had consulted a general doctor or mental health professional about the child’s mental health problems compared with children with only high scores on the brief SDQ. Among children with only serious overall difficulties, 36.6% were currently enrolled in special education, 32.0% had parents who had consulted with a general doctor about the child’s mental health problems, and 40.1% had consulted with a mental health professional. Among children with both high scores on the brief SDQ and serious overall difficulties, 40.8% were currently enrolled in special education, 46.8% had parents who had consulted with a general doctor about the child’s mental health problems, and 58.5% had consulted with a mental health professional. Greater use of educational and health care services was found among children with serious overall difficulties (either with or without high scores on the brief SDQ) compared with those with only high scores on the brief SDQ. This pattern was similar among both younger (4–10 years) and older (11–17 years) children.

Use of educational and health care services was less among children without problems compared with children with problems (Figure 10 and Table 6). Among children aged 4–17 years without problems (neither high scores on the brief SDQ nor serious overall difficulties), 5.5% of children were currently enrolled in special education, 2.5% had a parent who had consulted with a general doctor about the child’s mental health problems, and 4.5% had a parent who had consulted a mental health professional. Use of educational and health care services was less among children without problems compared with children with problems among younger (4–10 years) and older (11–17 years) children.

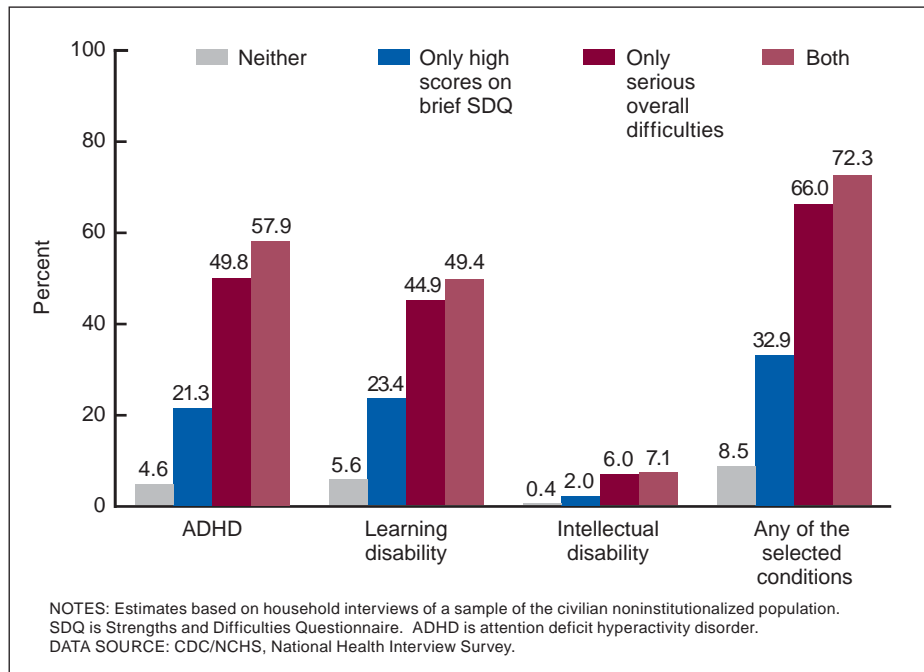


Figure 9. Selected developmental conditions among children aged 4–17 years, by category of emotional and behavioral problems: United States, average annual estimates for 2001–2007

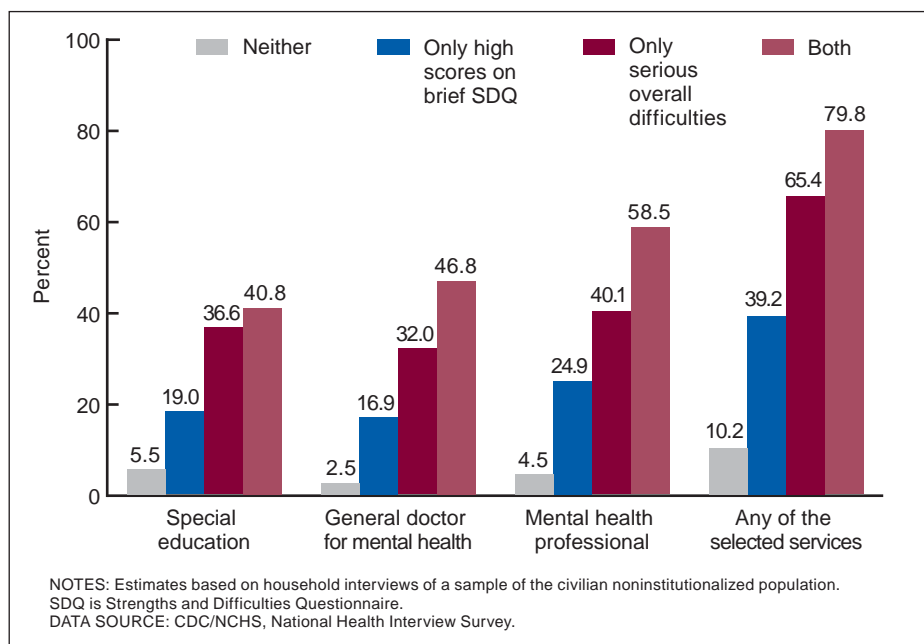


Figure 10. Use of selected educational and health care services among children aged 4–17 years, by category of emotional and behavioral problems: United States, average annual estimates for 2001–2007

Discussion

Among children aged 4–17 years, the two measures of emotional and behavioral problems indicated that a relatively small percentage of children had emotional and behavioral problems:

4.3% were identified by high scores on the brief SDQ and 5.1% by serious overall difficulties. Surprisingly, though, these two measures of emotional and behavioral problems in children did not identify the same group of children.

Among the 7.4% of children identified to have emotional and behavioral problems by either of the two NHIS measures, only 28% were identified by both measures. Approximately 30% of children were identified by only high scores on the brief SDQ and 42% were identified by only serious overall difficulties. In addition to the lack of concordance between the two measures of emotional and behavioral problems, there were significant differences in the sociodemographic characteristics, diagnosed developmental conditions, and use of educational and health care services among children with only high scores on the brief SDQ, only serious overall difficulties, and both high SDQ scores and serious overall difficulties.

Results from the multivariate analysis indicated that less affluent children were more likely to have high scores on the brief SDQ (either with or without serious overall difficulties) than more affluent children with family income 400% or more of the poverty level. However, there was no relationship between family income and the risk of having serious overall difficulties. Males and children with Medicaid coverage were more likely to have serious overall difficulties (either with or without high scores on the brief SDQ) compared with females and children with private health insurance coverage at the time of the interview. Additionally, the results of the multivariate analysis revealed that, after adjustment for other sociodemographic characteristics, age and race and ethnicity and language of interview were not independently associated with any of the categories of emotional and behavioral problems.

Results related to diagnosed developmental conditions showed that children with serious overall difficulties (either with or without high scores on the brief SDQ) compared with children with only high scores on the brief SDQ were more likely to have a diagnosed developmental condition (ADHD, learning disability, or intellectual disability). Children with serious overall difficulties (either with or without high scores on the brief SDQ) compared with children with only high scores on the

brief SDQ were also more likely to have used educational and health care services. Among children with emotional and behavioral problems, the highest levels of service use were reported for children with both high scores on the brief SDQ and serious overall difficulties.

The findings in this report are similar to the results from several previous studies using measures from the SDQ, which also reported marked differences in the diagnosed developmental conditions and use of mental health services between children with and without emotional and behavioral problems (8–10,12,13). However, the current report also shows significant differences among children when high scores on the brief SDQ and serious overall difficulties are used to create three categories of emotional and behavioral problems (only high scores on the brief SDQ, only serious overall difficulties, and both). While it is likely that some of the variation observed in the developmental conditions and service use among the three groups of children with problems reflect differences in the specific diagnosable mental health conditions of children in each group, other factors may contribute to this variation. Past studies have shown that the duration and severity of a child's emotional and behavioral symptoms as well as the level of family burden reported by parents may influence a parent's recognition and evaluation of a child's emotional and behavioral problems (13,14).

Although this report is unable to explore potential explanations for the differences in the number, characteristics, conditions, and service use of children in the three groups with problems, the description of these differences may be useful for analysts who plan to use the measures from the brief SDQ. For example, studies focusing on the association between measures of socioeconomic adversity and emotional and behavioral problems of children might consider how the choice of a measure of problems could influence the strength of these relationships. Findings from the 2001–2007 NHIS show a stronger

negative association between family income and only high scores on the brief SDQ than between family income and measures based on serious overall difficulties. Similarly, studies focusing on educational and health care services among children with emotional and behavioral problems also might evaluate how the choice of a measure of problems could affect estimates of mental health service use (15). For example, results from the 2001–2007 NHIS indicate lower levels of mental health service use among children with only high scores on the brief SDQ compared with children with serious overall difficulties (either with or without high scores on the brief SDQ).

Strengths and limitations

The use of the SDQ to measure emotional and behavioral problems in children is a strength of the present study. Research by Kessler and colleagues has shown that the brief version of the SDQ is a reliable and valid instrument for screening psychiatric disorders in adolescents (9). Another strength of this report is the use of a large nationally representative sample that allowed the comparison of three groups of children with emotional and behavioral problems (those with only high scores on the brief SDQ, those with only serious overall difficulties, and those with both). Additionally, because the NHIS includes a wide array of questions about children's sociodemographic characteristics and use of educational and health care services, it was possible to describe the characteristics of children with and without problems.

Among the limitations of this study is the reliance on parents as the only source of information about a child's emotional and behavioral problems. Past research on the sensitivity and specificity of different versions of SDQ data have indicated greater validity and reliability of estimates of emotional and behavioral problems based on reports from multiple informants including parents, teachers, and, for some age groups, children (16). Although research by Kessler and others have determined

that high scores on the parent version of the brief SDQ can be used to identify adolescents aged 13–17 years with serious emotional and behavioral problems, additional research is needed to validate high scores on the brief SDQ as a useful measure of emotional and behavioral problems of younger children (9). Currently a study using data from the NHIS is being conducted, with support from SAMHSA, to determine the range of scores for the parent version of the brief SDQ that identifies children with serious diagnosable mental health disorders (17).

Another limitation of this study is the cross-sectional nature of the NHIS that precludes the identification of causal links between parent reports of emotional and behavioral problems, access to care, and a child's use of educational and health care services. The brief version of the SDQ in the NHIS also lacks information about the severity and duration of the child's symptoms. The higher prevalence of diagnosed conditions and higher level of service use by children with both high scores on the brief SDQ and serious overall difficulties may indicate that these children have more severe conditions. Because the NHIS did not include questions about the timing, adequacy, or duration of child mental health service use, these aspects of service use could not be explored. Finally, it should be noted that results from the survey only describe children in the noninstitutionalized population and exclude children living in psychiatric hospitals, juvenile justice centers, and other institutions.

Conclusion

This report examines three measures of emotional and behavioral problems (only high scores on the brief SDQ, only serious overall difficulties, and both) using data from the 2001–2007 NHIS. The findings indicate that the prevalence of emotional and behavioral problems and the sociodemographic characteristics, diagnosed developmental conditions, and service use of children with problems depend on the measure of emotional and behavioral problems

selected. Information about the relationships between specific measures of emotional and behavioral problems and other aspects of a child's life may be helpful in guiding the choice of a measure of emotional and behavioral problems for future studies of child mental health.

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Table 1. Prevalence estimates of high scores on the brief Strengths and Difficulties Questionnaire and serious overall difficulties among children aged 4–17 years, by year: United States, 2001–2007

Year	High scores on brief SDQ ¹	Serious overall difficulties ²
	Percent (standard error)	
2001	4.5 (0.3)	5.2 (0.3)
2002	4.9 (0.3)	5.5 (0.3)
2003	4.3 (0.3)	4.8 (0.3)
2004	4.4 (0.3)	5.4 (0.3)
2005	4.0 (0.2)	4.6 (0.3)
2006	4.3 (0.3)	5.0 (0.3)
2007	3.8 (0.3)	5.2 (0.4)

¹Estimates include children with and without serious overall difficulties. Trend is statistically significant. SDQ is Strengths and Difficulties Questionnaire.

²Estimates include children with and without high scores on the brief SDQ. Trend is not statistically significant.

NOTES: Data are shown in Figure 1. See "Technical Notes" for definition of high scores on the brief SDQ and serious overall difficulties. Estimates are based on household interviews of a sample of the civilian noninstitutionalized population.

DATA SOURCE: CDC/NCHS, National Health Interview Survey, 2001–2007.

Table 2. Prevalence estimates of high scores on the brief Strengths and Difficulties Questionnaire and serious overall difficulties among children aged 4–17 years, by selected characteristics: United States, average annual estimates for 2001–2007

Characteristic	High scores on brief SDQ ¹	Serious overall difficulties ²
	Percent (standard error)	
Total	4.3 (0.1)	5.1 (0.1)
Age (years) ³		
4–7	2.8 (0.2)	3.6 (0.2)
8–10	4.2 (0.2)	5.3 (0.2)
11–14	5.0 (0.2)	5.8 (0.2)
15–17	5.3 (0.2)	6.0 (0.3)
Sex		
Male	4.8 (0.1)	6.3 (0.2)
Female	3.7 (0.1)	3.8 (0.2)
Race and ethnicity, interview language ⁴		
Non-Hispanic white	4.2 (0.1)	5.4 (0.2)
Non-Hispanic black	5.2 (0.3)	5.7 (0.3)
Non-Hispanic other	3.8 (0.4)	4.7 (0.4)
Hispanic, English	4.6 (0.3)	4.5 (0.3)
Hispanic, Spanish	3.0 (0.3)	2.5 (0.2)
Family structure		
Two parent	3.2 (0.1)	4.1 (0.1)
Mother only	7.0 (0.3)	7.7 (0.3)
Other	6.3 (0.4)	7.0 (0.5)
Family income as a percent of poverty level ⁵		
Below 100%	7.6 (0.4)	7.3 (0.3)
100%–199%	5.1 (0.3)	6.0 (0.3)
200%–399%	3.9 (0.2)	4.7 (0.2)
400% or more	2.1 (0.1)	3.5 (0.2)
Health insurance status at time of interview		
Private ⁵	3.1 (0.1)	4.0 (0.1)
Medicaid ⁶	7.5 (0.3)	8.3 (0.3)
Uninsured	4.8 (0.3)	4.3 (0.3)

¹Estimates include children with and without serious overall difficulties. SDQ is Strengths and Difficulties Questionnaire.

²Estimates include children with and without high scores on the brief SDQ.

³The test for trend for each outcome was significant ($p < 0.001$).

⁴Language of interview for Hispanic children included English interviews conducted only in English, and Spanish interviews conducted only in Spanish or in Spanish and English.

⁵Private includes any private coverage and military insurance coverage.

⁶Medicaid includes only Medicaid, CHIP, Medicare, other state-sponsored insurance, or other government-sponsored insurance coverage.

NOTES: See "Technical Notes" for definitions of high scores on the brief SDQ, serious overall difficulties, and other characteristics. Estimates are based on household interviews of a sample of the civilian noninstitutionalized population.

DATA SOURCE: CDC/NCHS, National Health Interview Survey, 2001–2007.

Table 3. Prevalence estimates of three categories of emotional and behavioral problems (only high scores on the brief Strengths and Difficulties Questionnaire, only serious overall difficulties, or both) among children aged 4–17 years, by selected characteristics: United States, average annual estimates for 2001–2007

Characteristic	Category of emotional and behavioral problems		
	Only high scores on brief SDQ ¹	Only serious overall difficulties	Both ²
		Percent (standard error)	
Total	2.2 (0.1)	3.1 (0.1)	2.1 (0.1)
Age (years) ³			
4–7	1.7 (0.1)	2.5 (0.2)	1.1 (0.1)
8–10	2.0 (0.2)	3.2 (0.2)	2.2 (0.2)
11–14	2.6 (0.2)	3.4 (0.2)	2.4 (0.2)
15–17	2.6 (0.2)	3.3 (0.2)	2.7 (0.2)
Sex			
Male	2.3 (0.1)	3.9 (0.1)	2.5 (0.1)
Female	2.1 (0.1)	2.2 (0.1)	1.6 (0.1)
Race and ethnicity, interview language ⁴			
Non-Hispanic white	2.0 (0.1)	3.2 (0.1)	2.2 (0.1)
Non-Hispanic black	3.0 (0.2)	3.5 (0.2)	2.2 (0.2)
Non-Hispanic other	1.9 (0.3)	2.8 (0.3)	2.0 (0.3)
Hispanic, English	2.7 (0.2)	2.7 (0.2)	1.8 (0.2)
Hispanic, Spanish	2.3 (0.2)	1.8 (0.2)	0.7 (0.1)
Family structure			
Two parent	1.7 (0.1)	2.6 (0.1)	1.5 (0.1)
Mother only	3.6 (0.2)	4.4 (0.2)	3.4 (0.2)
Other	3.4 (0.3)	4.0 (0.3)	2.9 (0.3)
Family income as a percent of poverty level ³			
Below 100%	4.1 (0.3)	3.7 (0.2)	3.6 (0.2)
100%–199%	2.8 (0.2)	3.7 (0.2)	2.3 (0.2)
200%–399%	1.9 (0.1)	2.8 (0.1)	1.9 (0.1)
400% or more	1.0 (0.1)	2.5 (0.1)	1.1 (0.1)
Health insurance status at time of interview			
Private ⁵	1.5 (0.1)	2.6 (0.1)	1.5 (0.1)
Medicaid ⁶	3.8 (0.2)	4.7 (0.2)	3.7 (0.2)
Uninsured	3.0 (0.3)	2.6 (0.2)	1.8 (0.2)

¹SDQ is Strengths and Difficulties Questionnaire.²Both refers to both high scores on the brief SDQ and serious overall difficulties.³The test for trend for each outcome was significant ($p < 0.001$).⁴Language of interview for Hispanic children included English interviews conducted only in English, and Spanish interviews conducted only in Spanish or in Spanish and English.⁵Private includes any private coverage and military insurance coverage.⁶Medicaid includes only Medicaid, CHIP, Medicare, other state-sponsored insurance, or other government-sponsored insurance coverage.

NOTES: Data shown in Figures 2–8. See "Technical Notes" for definitions of high scores on the brief SDQ, serious overall difficulties, and other characteristics. Estimates are based on household interviews of a sample of the civilian noninstitutionalized population.

DATA SOURCE: CDC/NCHS, National Health Interview Survey, 2001–2007.

Table 4. Adjusted risk ratios for three categories of emotional and behavioral problems (only high scores on the brief Strengths and Difficulties Questionnaire, only serious overall difficulties, or both) among children aged 4–17 years by selected characteristics: United States, average annual estimates for 2001–2007

Characteristic	Only high scores on brief SDQ ¹	Only serious overall difficulties	Both ²
	Adj RR (95% CI) ^{3,4}	Adj RR (95% CI)	Adj RR (95% CI)
Age (years)			
4–7	0.59 (0.27, 1.31)	0.70 (0.35, 1.41)	0.38 (0.12, 1.19)
8–10	0.73 (0.36, 1.50)	0.92 (0.51, 1.66)	0.76 (0.37, 1.56)
11–14	0.95 (0.52, 1.72)	1.02 (0.59, 1.75)	0.86 (0.44, 1.66)
15–17	1.00	1.00	1.00
Sex			
Male	1.12 (0.69, 1.82)	1.77 (1.23, 2.56)	1.59 (1.02, 2.47)
Female	1.00	1.00	1.00
Race and ethnicity, interview language⁵			
Non-Hispanic black	0.89 (0.46, 1.70)	0.75 (0.39, 1.45)	0.52 (0.20, 1.33)
Non-Hispanic other	0.76 (0.31, 1.88)	0.83 (0.40, 1.72)	0.75 (0.32, 1.76)
Hispanic, English	0.99 (0.52, 1.86)	0.69 (0.34, 1.40)	0.57 (0.24, 1.35)
Hispanic, Spanish	0.69 (0.30, 1.56)	0.43 (0.14, 1.27)	0.18 (0.03, 1.27)
Non-Hispanic white	1.00	1.00	1.00
Family structure			
Mother only	1.48 (0.94, 2.33)	1.50 (0.97, 2.30)	1.66 (1.04, 2.64)
Other	1.47 (0.85, 2.54)	1.31 (0.76, 2.27)	1.40 (0.79, 2.48)
Two parent	1.00	1.00	1.00
Family income as a percent of poverty level			
Below 100%	2.63 (1.69, 4.11)	1.01 (0.53, 1.93)	2.45 (1.49, 4.03)
100%–199%	2.07 (1.28, 3.36)	1.17 (0.66, 2.08)	1.83 (1.06, 3.15)
200%–399%	1.73 (1.07, 2.80)	1.06 (0.62, 1.81)	1.76 (1.07, 2.90)
400% or more	1.00	1.00	1.00
Health insurance status at time of interview			
Medicaid ⁶	1.60 (0.98, 2.61)	1.89 (1.27, 2.83)	2.08 (1.30, 3.31)
Uninsured	1.45 (0.85, 2.47)	1.12 (0.61, 2.04)	1.15 (0.58, 2.27)
Private ⁷	1.00	1.00	1.00

¹SDQ is Strengths and Difficulties Questionnaire.

²Both refers to both high scores on the brief SDQ and serious overall difficulties.

³Adj RR is adjusted risk ratio. The adj RRs associated with the categories of each sociodemographic variable are adjusted for all the other sociodemographic variables shown in the table.

⁴CI is confidence interval.

⁵Language of interview for Hispanic children included English interviews conducted only in English, and Spanish interviews conducted only in Spanish or in Spanish and English.

⁶Medicaid includes only Medicaid, CHIP, Medicare, other state-sponsored insurance, or other government-sponsored insurance coverage.

⁷Private includes any private coverage and military insurance coverage.

NOTES: See "Technical Notes" for definitions of high scores on the brief SDQ, serious overall difficulties, and other characteristics. Estimates are based on household interviews of a sample of the civilian noninstitutionalized population.

DATA SOURCE: CDC/NCHS, National Health Interview Survey, 2001–2007.

Table 5. Selected diagnosed developmental conditions among children aged 4–17 years, by age group and category of emotional and behavioral problems: United States, average annual estimates for 2001–2007

Category of emotional and behavioral problems	ADHD ¹	Learning disability	Intellectual disability	Any of the selected conditions
All children				
Percent (standard error)				
Neither ²	4.6 (0.1)	5.6 (0.1)	0.4 (0.0)	8.5 (0.1)
Only high scores on brief SDQ ³	21.3 (1.5)	23.4 (1.5)	2.0 (0.5)	32.9 (1.6)
Only serious overall difficulties	49.8 (1.4)	44.9 (1.5)	6.7 (0.8)	66.0 (1.3)
Both ⁴	57.9 (1.8)	49.1 (1.9)	7.1 (1.0)	72.3 (1.7)
4–10 years of age				
Neither	3.1 (0.1)	4.1 (0.2)	0.3 (0.0)	6.2 (0.2)
Only high scores on brief SDQ	20.3 (2.2)	21.8 (2.1)	*	32.4 (2.5)
Only serious overall difficulties	46.8 (2.1)	40.7 (2.2)	7.7 (1.4)	64.2 (2.0)
Both	62.2 (2.8)	45.3 (3.0)	7.8 (2.0)	75.5 (2.4)
11–17 years of age				
Neither	6.2 (0.2)	7.1 (0.2)	0.4 (0.0)	10.7 (0.2)
Only high scores on brief SDQ	21.9 (1.9)	24.4 (2.0)	1.7 (0.5)	33.2 (2.1)
Only serious overall difficulties	52.1 (1.9)	48.2 (2.0)	6.0 (0.9)	67.5 (1.8)
Both	55.2 (2.4)	51.4 (2.4)	6.8 (1.1)	70.3 (2.2)

* Estimates have a relative standard error greater than 30% and do not meet standards of reliability or precision.

¹ADHD is attention deficit hyperactivity disorder.

²Neither refers to neither high scores on the brief SDQ nor serious overall difficulties.

³SDQ is Strengths and Difficulties Questionnaire.

⁴Both refers to both high scores on the brief SDQ and serious overall difficulties.

NOTES: Data are shown in Figure 9. See "Technical Notes" for definitions of high scores on the brief SDQ, serious overall difficulties, and selected diagnosed developmental conditions. Estimates are based on household interviews of a sample of the civilian noninstitutionalized population.

DATA SOURCE: CDC/NCHS, National Health Interview Survey, 2001–2007.

Table 6. Use of selected educational and health care services among children aged 4–17 years, by age group and category of emotional and behavioral problems: United States, average annual estimates for 2001–2007

Category of emotional and behavioral problems	Special education (current)	General doctor for mental health (past 12 months)	Mental health professional (past 12 months)	Any of the selected services
All children				
Percent (standard error)				
Neither ¹	5.5 (0.1)	2.5 (0.1)	4.5 (0.1)	10.2 (0.2)
Only high scores on brief SDQ ²	18.2 (1.4)	16.9 (1.3)	24.9 (1.5)	39.2 (1.7)
Only serious overall difficulties	36.6 (1.4)	32.0 (1.4)	40.1 (1.5)	65.4 (1.4)
Both ³	40.8 (1.9)	46.8 (1.9)	58.5 (1.9)	79.8 (1.4)
4–10 years of age				
Neither	5.3 (0.2)	2.6 (0.1)	3.8 (0.1)	9.4 (0.2)
Only high scores on brief SDQ	17.0 (2.0)	18.2 (2.2)	23.6 (2.3)	36.9 (2.6)
Only serious overall difficulties	37.8 (2.1)	35.5 (2.1)	37.6 (2.1)	67.1 (2.0)
Both	41.5 (3.1)	48.2 (3.1)	54.4 (3.1)	80.0 (2.2)
11–17 years of age				
Neither	5.6 (0.2)	2.5 (0.1)	5.2 (0.2)	10.9 (0.2)
Only high scores on brief SDQ	19.0 (1.9)	15.9 (1.6)	25.8 (2.0)	40.7 (2.3)
Only serious overall difficulties	35.6 (1.9)	29.2 (1.8)	42.2 (2.0)	64.1 (1.9)
Both	40.3 (2.3)	45.9 (2.4)	61.0 (2.4)	79.7 (1.8)

¹Neither refers to neither high scores on the brief SDQ nor serious overall difficulties.

²SDQ is Strengths and Difficulties Questionnaire.

³Both refers to both high scores on the brief SDQ and serious overall difficulties.

NOTES: Data are shown in Figure 10. See "Technical Notes" for definitions of high scores on the brief SDQ, serious overall difficulties, and selected educational and health care services. Estimates are based on household interviews of a sample of the civilian noninstitutionalized population.

DATA SOURCE: CDC/NCHS, National Health Interview Survey, 2001–2007.

Technical Notes

Sample design

The National Health Interview Survey (NHIS) is a cross-sectional household interview survey of the U.S. civilian noninstitutionalized population. Data are collected continuously throughout the year in all 50 states and the District of Columbia. The NHIS uses a multistage, clustered sample design to produce national estimates for a variety of health indicators. Some health and demographic information is collected for all household members. Additional detailed health-related information is collected for one randomly selected child (the “sample child”) in each family that includes children 0–17 years. Information about the sample child is provided by an adult, usually a parent, who is knowledgeable about the child’s health. Interviews are conducted in the home by field staff from the U.S. Census Bureau using a computer-assisted personal interview (CAPI), with telephone interviewing permitted for follow-up, if necessary. Starting in 2006, the sample design included Asian children and adults in the oversampling of populations in the NHIS; in 2001–2005, only households with black and Hispanic children and adults were oversampled. A detailed description of the NHIS sample design and the survey questionnaires are available from: http://www.cdc.gov/nchs/nhis/quest_data_related_1997_forward.htm.

Item nonresponse

Between 2001 and 2007, item nonresponse for each of the demographic indicators for children aged 4–17 years shown in this report was generally less than 1%, with the exception of poverty status, which is based on detailed family income as ascertained in the family component of the questionnaire. Because the item nonresponse for the poverty status variable for children aged 4–17 years was relatively high (22%–31% between 1997 and 2007), family income data were imputed for families with missing

values (Schenker N, Raghunathan TE, Chiu P, Makuc DM, Zhang G, and Cohen AJ. Multiple imputation of family income and personal earnings in the NHIS: Methods and examples. Available from: <http://www.cdc.gov/nchs/data/nhis/tecdoc.pdf>). Item nonresponse for the indicators of emotional and behavioral problems, use of special education services, and use of health care services was 1% or less. The denominators for statistics shown in the tables exclude children with unknown information.

Tests of significance

Statistical tests performed to assess significance of differences in the estimates were two-tailed with no adjustments for multiple comparisons. The test statistic used to determine statistical significance of differences between two percentages was

$$Z = \frac{|X_a - X_b|}{\sqrt{(S_a^2 + S_b^2)}}$$

where X_a and X_b are the two percentages being compared, and S_a and S_b are the standard errors of those percentages. The critical value used for two-sided tests at the 0.05 level of significance was 1.96.

Definitions of terms

Demographic and socioeconomic terms

Age—The age recorded for each child is the age at his or her last birthday.

Family income as a percentage of the poverty level—Poverty level is based on family income and family size and composition using the U.S. Census Bureau’s poverty thresholds.

Family structure—A mother-only family refers to a family in which a mother, but not a father, is a household member. A two-parent family refers to a family in which both a mother and father are household members.

Health insurance coverage—NHIS respondents were asked about the health insurance coverage of the child at the

time of the interview. Respondents reported whether the child was covered by private insurance (obtained through the employer or workplace, purchased directly, or through a local or community program), military coverage (including VA, TRICARE, or CHAMP-VA), a state-sponsored health plan, another government program, Medicare, Children’s Health Insurance Program (CHIP), Indian Health Service (IHS), or any single service plans. This information was used to form a health insurance hierarchy, which consisted of three mutually exclusive categories. In this report, children with more than one type of health insurance were assigned to the first appropriate category in the following hierarchy: private (this category also includes military coverage), Medicaid (this category also includes CHIP, Medicare, a state-sponsored health plan, or another government program) and uninsured (this category also includes children who are only covered by IHS or only have single service plans).

Hispanic or Latino ethnicity—Hispanic or Latino ethnicity includes children of Mexican, Puerto Rican, Cuban, Central and South American, or Spanish origins. Children of Hispanic or Latino ethnicity may be of any race.

Race and ethnicity—Race is defined as the reported race or races of children and ethnicity as the reported origin of children, Hispanic or non-Hispanic. The reporting of race and ethnicity conform to the 1997 Office of Management and Budget Race and Ethnic Standards for Statistical Statistics and Administrative Reporting. In this report, three categories are shown: non-Hispanic white, non-Hispanic black, and Hispanic of any race. Other racial categories, including a multiple-race category, are not shown due to the small number of sample children in these categories.

Language of interview for Hispanic children—Spanish language interviews were conducted in Spanish or in Spanish and English. English language interviews were conducted in English.

Terms related to measures of emotional and behavioral problems

Brief Strengths and Difficulties Questionnaire (SDQ)—The Strengths

and Difficulties Questionnaire (SDQ), developed and copyrighted by Robert Goodman, is a screening tool for identifying emotional and behavioral difficulties in children. The brief SDQ includes five questions about the child's symptoms related to conduct problems, hyperactivity-inattention, emotional symptoms, and peer problems. The brief SDQ also includes a single question about the severity of the child's overall difficulties. The parent was asked the following questions: *"I am going to read a list of items that describe children. For each item, please tell me if it has been: not true, somewhat true, or certainly true for (sample child) during the past 6 months. [Sample child]: 1) Is generally well behaved, usually does what adults request, 2) has many worries, or often seems worried, 3) is often unhappy, depressed, or tearful, 4) gets along better with adults than with other children/youth, and 5) has good attention span, sees chores or homework through to the end."* Responses to these questions in the SDQ were coded 0= "not true," 1= "somewhat true," and 2= "certainly true." Responses to all questions were scored 0, 1, 2, so that a higher score indicated higher risk of emotional and behavioral problems.

High scores on the brief SDQ—High scores on the brief SDQ were defined as a score of 6 or more based on parent's responses to five questions about the child's symptoms related to conduct problems, hyperactivity-inattention, emotional symptoms, and peer problems.

Serious overall difficulties—A parent report of overall difficulties was based on responses to the following question: *"Overall, do you think that [sample child] has any difficulties in one or more of the following areas: emotions, concentration, behavior, or being able to get along with other people?"* Response options were 1) "no"; 2) "yes, minor difficulties"; 3) "yes, definite difficulties"; and 4) "yes, severe difficulties." Children whose parents responded "yes, definite difficulties" or "yes, severe difficulties" were defined as having serious overall difficulties.

Terms related to health conditions

Attention deficit hyperactivity disorder (ADHD)—A parent report of a diagnosis of attention deficit hyperactivity disorder by a doctor or health professional.

Intellectual disability—A parent report of a diagnosis of mental retardation or other developmental delay by a doctor or health professional.

Learning disability—A parent report of a diagnosis of learning disability by a representative from a school or health professional.

Terms related to use of health care and educational services

Contact with a general doctor about child's emotional or behavioral problem—Contact with a general doctor was based on a question that asked whether respondents, during the past 12 months, had seen or talked to a general doctor because of an emotional or behavioral problem that the sample child had.

Contact with a mental health professional—Contact with a mental health professional was based on a question that asked whether respondents, during the past 12 months, had seen or talked to a mental health care provider about the sample child's health. The providers included a psychiatrist, psychologist, psychiatric nurse, or clinical social worker.

Special education—Special education was based on a question that asked respondent if the child currently received special education services.

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