

Addendum to Final Report CDC Contract 200-2003-01054  
Validation Studies of Mental Health Indices in the National Health Interview Survey

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## **Addendum to Task 22: Evaluate the accuracy of the 6-question parent-report brief SDQ in predicting DSM-IV diagnoses**

For task 22 of the Final Report CDC Contract 200-2003-01054, we focused on the 12-month clinical reappraisal sample to investigate the strength of associations of the brief SDQ with the K-SADS diagnoses of serious, serious-moderate, and any (serious or moderate or mild) 12-month disorders. We first investigated this using the Goodman recommended scoring method of high total difficulties dichotomized as close as possible to the top 10% of the distribution. The closest we could come to the 10% cut-point in the full NCS-A sample with the more coarsely scaled brief SDQ was a prevalence estimate either of 15.2% (using a generous cut-point on the summary score) or a prevalence estimate of 7.1% (using the next least generous cut-point). Using the less generous of the two cut-points on the screener, we were able to reproduce the observed K-SADS prevalence of serious emotional disturbance with no bias (6.1% in the brief SDQ compared to 4.8% in the K-SADS) and to document good individual-level concordance (AUC = .85). However this method yielded less accurate estimates of K-SADS serious-moderate disorder (AUC = .63) and any disorder (AUC = .56). (See Final Report CDC Contract 200-2003-01054 Table 27)

We improved upon this concordance by relaxing the requirement that the cut-point be set at 10% and by allowing the cut-point to be closer to the K-SADS prevalence. The impairment question was found not to contribute significantly to the prediction of K-SADS scores (see Table 7 Parent defined high difficulties row of the Final Report CDC Contract 200-2003-01054). Therefore, we summed the 0-2 responses on the other 5 brief SDQ questions to create a scale with scores in the range 0-10. Cut-points on the 0-10 scale were selected to maximize concordance with the K-SADS prevalence estimates for serious, serious-moderate, and any disorder. The cut-points used were a score of 3 or greater for any disorder, a score of 4 or greater for serious-moderate, and 7 or greater for serious disorder. This led to slightly higher estimates of concordance with K-SADS serious-moderate disorder (AUC = .70-.71) and with any disorder (AUC=.58) but the strength of the relationship between the brief SDQ and the ksads serious disorder dropped from the good to the moderate range (AUC=.80). (See Final Report CDC Contract 200-2003-01054 Table 28)

Upon further review we found that by choosing a slightly more relaxed cut-point on the 0-10 scale for serious disorder we could do a better job of reproducing the observed K-SADS prevalence of serious disorder. Using a cut-point of 6 or more out of 10 on the brief SDQ rather than 7 or more resulted in a slightly higher but unbiased prevalence of serious disorder and individual-level concordance in the good range (AUC=.85). An updated Table 28 can be found below.

We also investigated the relationship between the brief SDQ and parental report of service use in the past 12 months for the child's emotional problems in predicting observed K-SADS prevalence of 12 month mental disorder. We found that including service use reduced the individual-level concordance and yielded less accurate estimates of observed K-SAD serious disorder (results available upon request). This is not surprising given that data from the 1980 Epidemiological Catchment Area Survey, the 1990-2 National Comorbidity Survey, and the 2001-3 National Comorbidity Survey Replication all reported that approximately half of persons using mental health services during the year before interview failed to meet criteria for any of the DSM disorders assessed in the surveys.<sup>1-4</sup> However, it is important to note that in our NCS\_A clinical sample, a full 70.5% of the parents among those identified by the SDQ short screening scale as having a child with serious mental disorder (the 6.1% with a brief SDQ score  $\geq 6$  out of 10) reported seeking service for their child at some point in the last year. This compares to 53.8% having sought treatment in the last 12 months among those with an observed K-SADS serious disorder (the 4.8% of those identified as having serious mental disorder by a clinician).

**Table 28. Concordance of short (brief) SDQ scoring method best dichotomy vs. 12-Month clinical diagnoses, no impairment score range 0-10 (n=156)<sup>1</sup>**

	Prevalence		Sens <sup>3</sup>		Spec <sup>4</sup>		TCA <sup>5</sup>		Kappa		McNemar	PPV <sup>6</sup>		NPV <sup>7</sup>		OR	(95% CI)	AUC				
	Screen	True																				
	%	(se)	%	(se)	%	(se)	%	(se)	%	(se)	%	(se)	%	(se)	%	(se)						
Mental disorder																						
Serious 12 Month	6.1	2.0	4.8	1.8	73.6	13.9	97.4	1.4	96.2	1.5	0.63	0.14	0.36-0.91	0.6	0.428	58.6	16.8	98.6	0.7	102.4	17.7-591.0	0.85
Serious or Moderate 12 Month #1 <sup>2</sup>	15.6	3.2	19.9	3.3	49.0	9.2	92.8	2.6	84.1	3.0	0.45	0.09	0.27-0.64	1.8	0.176	62.7	10.8	88.0	2.8	12.3	4.3-35.1	0.71
Serious or Moderate 12 Month #2 <sup>2</sup>	24.3	3.8	19.9	3.3	55.8	9.0	83.5	3.7	78.0	3.5	0.36	0.09	0.19-0.53	1.4	0.238	45.6	8.7	88.4	2.9	6.4	2.6-15.6	0.70
Any 12 Month	40.6	4.4	36.6	4.2	50.4	7.0	65.0	5.4	59.7	4.3	0.15	0.08	-0.01-0.31	0.6	0.423	45.3	6.8	69.5	5.2	1.9	0.9-3.9	0.58

Please see "Briefsdq.doc" memo for a description of the scoring of the Brief SDQ at the parent level.

<sup>1</sup>The "True" Prevalence is made up of 12-month (serious, moderate, or any) KSAD disorders at the composite symptom level, while the "Screen" is based on scores to the Brief SDQ (Serious ≥ 6, Moderate ≥ 4, and Any ≥ 3) from the parent report only (impairment not included).

<sup>2</sup>When dichotomizing this brief sdq, there were 2 cut-points equidistant from the "true" prevalence of 19.9. Serious or Moderate 12 Month #1 is the lower bound and Serious or Moderate 12 Month #2 is the upper bound.

<sup>3</sup>Sensitivity

<sup>4</sup>Specificity

<sup>5</sup>Total Classification Accuracy

<sup>6</sup>Positive Predictive Value

<sup>7</sup>Negative Predictive Value

## REFERENCES

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