

# Psychiatric Disorders Among Japanese Children

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## ABSTRACT

**Objective:** To generate current data on the prevalence of psychiatric disorders among Japanese children, using *DSM-III-R* criteria. **Method:** As part of an ongoing longitudinal study in a Japanese community sample, 114 mother-child dyads were interviewed when the children were approximately 8 years old. *DSM-III-R* disorders of the children were diagnosed through the administration of a structured diagnostic instrument, the parent and child versions of the Child Assessment Schedule, to both the children and their mothers. **Results:** The prevalence rate for any diagnosis was 49.1%, which is similar to that of U.S. children and adolescents. **Conclusion:** The Child Assessment Schedule is an appropriate scale for assessing the psychopathology of Japanese children, which is as prevalent as in a U.S. sample. *J. Am. Acad. Child Adolesc. Psychiatry*, 1999, 38(4):444-452. **Key Words:** Japan, school-age children, psychopathology, Child Assessment Schedule, *DSM-III-R*.

Along with development of structured interviews for child psychopathology within the past 15 years (Hodges, 1993), epidemiological studies of children's mental states have been undertaken in several locations (see Bird, 1996, for a review). There are obvious advantages to using structured diagnostic interviews, especially in the area of developmental psychopathology. To ascertain both universal and culture-specific aspects of children's psychopathology, a diagnostic instrument is needed which can supply comparable epidemiological information across various ethnic and cultural contexts and can be used repeatedly in longitudinal assessments. Although the usefulness of structured diagnostic interviews for

children has been confirmed in several studies (Hodges, 1993), few epidemiological studies using those instruments have been carried out in the East Asian countries.

In several diagnosis-based epidemiological studies that included child subjects, the prevalence rates of any psychiatric disorder have been reported to range between 12.4% and 50.6% (Bird, 1996; Shaffer et al., 1996). In a U.S. sample, Shaffer et al. (1996), using the Diagnostic Interview Schedule for Children Version 2.3 (DISC-2.3), reported that the prevalence for any *DSM-III-R* diagnosis (American Psychiatric Association, 1987) was 50.6% for children and adolescents aged 9 to 17 years. Similar rates were found by Bird et al. (1988) for a Puerto Rico population; 49.5% of children and adolescents (aged 4-16 years) who were interviewed using DISC (Costello et al., 1984) met any *DSM-III* diagnosis (American Psychiatric Association, 1980). While the epidemiological studies that used *DSM-III* or *DSM-III-R* criteria without a consideration for the severity of impairment found very high prevalence rates, lower rates were reported in studies that used different diagnostic criteria. Esser et al. (1990) found that 38.0% of German children aged 8 years met any psychiatric disorder in the *ICD-9* (World Health Organization, 1978), and Fombonne (1994), using the same criteria, reported a rate of 12.4% in French children aged 6 to 11 years. Although there is a wide range of prevalence rates, because of the broad variety of diagnoses included in the

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total rates and of methods for case ascertainment among the studies, the number of school-age children with psychiatric disorders in general population samples is by no means small.

In Japan, some questionnaire surveys of child psychopathology in general populations reported the prevalence rates of depression and attention-deficit hyperactivity disorder (ADHD). Murata et al. (1989) reported that 5.9% of Japanese junior high school students had high scores on the Children's Depression Inventory (Kovacs, 1981), suggesting a clinical-level depression. Using a checklist that allows for the diagnosis of ADHD as defined in the *DSM-III-R*, Kambayashi et al. (1994) showed that ADHD had been diagnosed in 5.3% of children aged 6 to 10 years. Some Japanese studies on child psychopathology within hospitalized populations have adopted diagnostic criteria such as the *DSM-III-R* or *ICD-10* (Yamazaki et al., 1993). The structured interviews and the diagnostic criteria, however, have never been used in epidemiological studies of Japanese children.

To determine prevalence rates in this age group and to compare these with other ethnic and cultural samples, there is an urgent need to establish a diagnostic methodology suitable for Japanese children. The purpose of this study was 3-fold: (1) to examine the reliability of the Japanese version of a well-established structured interview; the Child Assessment Schedule (CAS, modified version: Hodges, 1986, unpublished manuscript; Japanese version: Mukai, 1994) through analyses of the internal consistency of the diagnostically related symptom scales and to examine the validity of the child version of the CAS by comparing it with the Child Behavior Checklist (CBCL) (Achenbach and Edelbrock, 1983); (2) to obtain basic information (prevalence and comorbidity rates) about psychiatric disorders among Japanese school-age children, using *DSM-III-R*; and (3) to compare these prevalence rates with those in a representative U.S. sample.

## METHOD

### Participants

For a prospective study of maternal depression in pregnancy and the postpartum period (Kitamura et al., 1996), 1,329 women who attended the the obstetrics department of a general hospital in Kawasaki, an industrial city in Japan, participated in a longitudinal survey. Women who were at more than 12 weeks' gestation were excluded, but no other exclusion criteria were applied. The subjects ranged in age from 17 to 42 years, with a mean (SD) of 27.9 (4.2) years at the time of enrollment. For 48.3% of these women, the pregnancy was their first. The registration of the original subjects was completed between August 1984 and February 1986.

Although these initial participants ( $n = 1,329$ ) were not sampled randomly, their demographic features did not deviate from those of the Japanese population as a whole: while 44.9% of the fathers and 36.0% of the mothers in our sample had graduated from a university or college, 43.0% of male and 32.4% of female Japanese contemporaries are graduates of a university or college (Ministry of Education, 1993). The mean annual income of this sample was also similar to that of working Japanese populations (Ministry of Finance, 1985). According to Ministry of Health and Welfare (1985) statistics, 58.1% of Japanese mothers deliver their babies at the hospital.

Nine years after delivery, the addresses of 615 follow-up subjects were known (the numbers of subjects at several data collection points are 1,059 in middle pregnancy, 1,064 in late pregnancy, 1,002 at 1 month, 821 at 6 months, and 723 at 12 months). A large part of the sample attrition was caused by moving away and change of hospitals. In Japan, some mothers give birth to their children at the hospital near their parents' homes and stay at their parents' homes for as long as 1 month after delivery. Some other dropout cases were caused by pregnancy loss or refusal to cooperate in the longitudinal study. The attrition analyses comparing the subjects who dropped out of the study with those who remained revealed no relationships between the attrition and the basic demographic features (Sugawara et al., in press). A set of questionnaires and the invitation to the interview session (parent and target child) were mailed to these 615 subjects. A total of 269 subjects (43.7%) returned questionnaires. Of these subjects, 114 mother-child dyads agreed to be interviewed. Their children were aged between 7 and 9 years (mean = 8.52 years, SD = 0.53) and included 57 females (50.0%) and 57 males (50.0%). All mothers and children were Japanese, and all mothers were married. In 4 cases the mothers had divorced the children's biological fathers or the biological fathers had died. Annual family income when the children were 8 years old was between ¥2,500,000 and ¥20,000,000 (mean = ¥7,935,920; SD = ¥3,135,400); 35.9% had an annual income of ¥6,000,000; 37.9%, between ¥6,000,001 and ¥9,999,999; and 26.2%, greater than ¥10,000,000. The mean annual family income of this sample was similar to that of working Japanese populations (¥7,935,920 versus ¥7,712,000) (Ministry of Finance, 1994). Of the fathers, 46.9% had graduated from university or college, 42.5% were high school graduates, and 10.5% were junior high school graduates. Of the mothers, 39.0% were university or college graduates, 53.6% were high school graduates, and 10.6% were junior high school graduates. Because there was a relatively wide range of socioeconomic status, its effect on the emergence of children's psychiatric disorders was examined.

A series of analyses were conducted to examine whether the 114 subjects who were interviewed 9 years after delivery differed from the rest of the original sample ( $n = 1,215$ ) in terms of their demographic features ( $\chi^2$  and  $t$  test on the mean scores). There were no significant differences between these 2 groups regarding the age ( $p = .12$ ), annual income ( $p = .08$ ), or husband's educational attainment ( $p = .06$ ). However, the mothers who were interviewed at 9 years after delivery were more likely to have higher educational attainment ( $p < .05$ ) than the rest of the original sample.

### Procedures

Between August and November 1994, mothers and children were interviewed at home or in the hospital in Kawasaki, where they had been enrolled in the study 9 years previously. Mothers and children were interviewed separately, by different interviewers. The interviews were approximately 1 hour long. Mothers were given ¥10,000 for their participation.

*Child Assessment Schedule.* The CAS is a structured interview designed for clinical and epidemiological research with children (Hodges et al., 1982a; modified version: Hodges, 1986, unpublished manuscript). There is considerable evidence for the reliability and validity of the CAS, including assessment of interrater, test-retest, internal consistency, and interinformant reliability, as well as contrast group validity and construct validity (Hodges et al., 1982b, 1987, 1989a,b, 1990). All items of the CAS were translated into Japanese by the author (Mukai, 1994); thereafter the Japanese version was translated back into English by a native English speaker. The latter translation was compared with the original English text. No important differences between the original and the translated version were seen. For the purpose of this study, the content of the Japanese version of the CAS seemed appropriate to assess psychopathology in Japanese children.

Twelve *DSM-III-R* disorders (ADHD, conduct disorder, oppositional defiant disorder, simple phobia, social phobia, separation anxiety, overanxious disorder, obsessive-compulsive disorder, dysthymia, major depressive disorder, functional enuresis, and encopresis) were assessed with the CAS, administered directly to children (child version, C-CAS), and its parallel form (parent version, P-CAS) was administered to the mothers. None of the impairment or severity criteria were used.

First, the children were asked about 11 topic areas: school, friends, activities, family, fears, worries and anxieties, self-image, mood, physical complaints, expression of anger, and reality-testing symptomatology. After these inquiries, they were asked about the onset and duration of existing symptoms. A second researcher audiotaped and coded 22.8% ( $n = 26$ ) of the CAS interviews. For the most part, both the primary and secondary raters were graduate students in clinical or developmental psychology. The interviewers had some experience with children as part of their university training. Also, they were trained to administer a structured diagnostic interview for adults based on the *DSM-III-R* prior to participating in the study. Approximately 2 weeks were allowed to train the interviewers to administer the CAS. To ensure the quality and the reliability of the interview, various training methods were used: case vignettes (Sugiura et al., 1998), role-playing, and assessment by a psychiatrist (T.K.).

The  $\kappa$  values for interrater agreement for current *DSM-III-R* disorders were as follows: 1.00 for ADHD, conduct disorder, oppositional defiant disorder, and dysthymia; 0.78 for overanxious disorder; 0.67 for separation anxiety; and 0.33 for simple phobia. Because of low base rates, the  $\kappa$  values for major depression, social phobia, obsessive-compulsive disorder, encopresis, and enuresis were not generated.

*Child Behavior Checklist.* To examine the validity of the CAS, the parent version of the CBCL (Achenbach and Edelbrock, 1983) was completed by mothers ( $n = 114$ ) before interview sessions and the responses were collected by mail. The CBCL is a 112-item checklist of child behavior problems, and it has been found to be both reliable and valid (Achenbach and Edelbrock, 1983). The authors computed 4 subscales of the CBCL which correspond to ADHD, conduct disorder and oppositional defiant disorder, separation anxiety disorder, and major depression and dysthymia as defined in the *DSM-III-R*: 4 items (hyperactivity, inattention, impulsiveness, excessive talking,  $\alpha = .70$ ) for ADHD; 20 items (externalizing problems: many quarrels, bullying animal or peer, opposition, etc.,  $\alpha = .82$ ) for conduct disorder and oppositional defiant disorder; 3 items (clinging to adult, propensity for jealousy, strong need to be loved,  $\alpha = .50$ ) for separation anxiety disorder; and 5 items (loneliness, frequent crying, talk about killing oneself, lack of energy, depressed expression,  $\alpha = .61$ ) for major depression and dysthymia. For overanxious disorder and simple phobia, 1 item (too fearful or anxious) was used for the analysis.

## RESULTS

### Internal Consistency of the Diagnostically Related Symptom Scales of the CAS

Each C-CAS and P-CAS item was scored as "yes," "no," "ambiguous," or "nonscorable." Response items were phrased such that an affirmative response always indicated the presence of symptomatology. Following the guidelines for scoring (Hodges, 1986, unpublished manuscript), scores for the diagnostically related symptom scales were calculated. The Cronbach  $\alpha$  coefficient for each diagnostically related symptom scale is presented in Table 1.

High reliability ( $\alpha \geq .70$ ) was observed for 2 diagnostic categories of the C-CAS (conduct disorder and major depressive disorder) and 3 of the P-CAS (ADHD, conduct disorder, and phobic disorder). The scales for attention deficit, phobic disorder, and overanxious disorder of the C-CAS, and overanxious disorder of the P-CAS, were at a moderate level. The  $\alpha$  values observed for separation anxiety and oppositional defiant disorder of both the C-CAS and the P-CAS, and major depressive disorder of the P-CAS, were at a lower level. The lower coefficient of obsessive-compulsive disorder was due to fewer items (the item number entered into the calculation is 4 for the C-CAS and 3 for the P-CAS).

### Comparing the C-CAS and the CBCL

To examine the validity of the CAS diagnoses, we looked at the relationship between the CAS diagnoses and the score on the corresponding CBCL subscales. Fifty-eight subjects who did not have any of the CAS-defined disorders (C-CAS nor P-CAS) were identified

**TABLE 1**  
Internal Consistency of the Diagnostically Related Child Version (C-CAS) and Parent Version (P-CAS) of the Child Assessment Schedule (CAS) ( $N = 114$ )

DSM-III-R-Based Scales	C-CAS		P-CAS	
	No. of Items <sup>a</sup>	$\alpha$	No. of Items <sup>a</sup>	$\alpha$
ADHD	9	.67	14	.81
Conduct disorder	10	.79	9	.89
Oppositional defiant disorder	8	.43	8	.49
Phobic disorders	22	.63	19	.70
Separation anxiety	13	.56	12	.58
Overanxious disorder	17	.68	14	.69
Obsessive-compulsive disorder	4	.52	3	.49
Major depressive disorder	31	.72	28	.53

Note: ADHD = attention-deficit hyperactivity disorder.

<sup>a</sup> The values are items that contain more than one "yes" answer.

(no disorder group). Their mean score on each CBCL subscale (i.e., ADHD, conduct and oppositional defiant disorder, separation anxiety disorder, simple phobia, overanxious disorder, and major depression and dysthymia) was compared with that of the children who received the corresponding diagnosis by the C-CAS or P-CAS (Table 2). The CBCL subscale scores for 3 anxiety disorders (separation anxiety disorder, simple phobia, and overanxious disorder) were significantly higher among those who received the corresponding C-CAS diagnoses than among those without any disorder. Likewise, the CBCL scores for disruptive behavior disorders (ADHD, conduct and oppositional defiant disorder) and separation anxiety disorder were significantly higher among those who received the corresponding P-CAS diagnoses than among those without any disorder.

**TABLE 2**  
Comparison of the Child Assessment Schedule (CAS)  
and the Child Behavior Checklist (CBCL) Score  
on Diagnosis-Related Items

CAS Diagnosis	Mean Score (SD) on CBCL Diagnosis- Related Items	
Attention-deficit hyperactivity disorder		
No disorder ( <i>n</i> = 58)	1.65 (1.78)	
C-CAS ( <i>n</i> = 4)	3.75 (4.19)	-1.00
P-CAS ( <i>n</i> = 10)	4.70 (3.50)	-4.18**
Conduct disorder and oppositional defiant disorder		
No disorder ( <i>n</i> = 58)	2.57 (2.58)	
C-CAS ( <i>n</i> = 5)	5.00 (3.81)	-1.93†
P-CAS ( <i>n</i> = 6)	9.17 (5.19)	-3.07*
Separation anxiety disorder		
No disorder ( <i>n</i> = 58)	1.02 (0.95)	
C-CAS ( <i>n</i> = 17)	1.76 (1.56)	-2.40*
P-CAS ( <i>n</i> = 7)	2.14 (1.07)	-2.91**
Simple phobia		
No disorder ( <i>n</i> = 58)	0.11 (0.32)	
C-CAS ( <i>n</i> = 17)	0.35 (0.49)	-2.42*
P-CAS ( <i>n</i> = 13)	0.31 (0.63)	-1.10
Overanxious disorder		
No disorder ( <i>n</i> = 58)	0.11 (0.32)	
C-CAS ( <i>n</i> = 6)	0.50 (0.55)	-2.67**
P-CAS ( <i>n</i> = 6)	0.33 (0.52)	-1.04
Major depression and dysthymia		
No disorder ( <i>n</i> = 58)	0.93 (1.32)	
C-CAS ( <i>n</i> = 4)	1.00 (0.82)	-0.11
P-CAS ( <i>n</i> = 0)	—	—

Note: Analyses were conducted between control (no disorder group, *n* = 58) and each diagnosis group. C-CAS = child version of the CAS; P-CAS = parent version of the CAS.

† *p* < .10; \* *p* < .05; \*\* *p* < .01; all other values were non-significant.

#### Prevalence Rate at Age 8 Years

The prevalence rates are presented in Table 3. Reported rates combined both mother and child reports, according to the either/or rule (Piacentini et al., 1992). No significant gender differences were found. Although not reaching a significant level, ADHD was more likely to emerge among boys than girls ( $\chi^2 = 3.35, p = .067$ ).

Comorbidity rates among any disruptive behavior disorders, any anxiety disorders, and any depressive disorders are shown in Table 4. More than 10% of children had both a disruptive behavior disorder and an anxiety disorder. The rates of single diagnosis among those who had that disorder were as follows: ADHD, 16.7% (2/12); conduct disorder, 25.0% (1/4); oppositional defiant disorder, 0.0% (0/7); simple phobia, 32.1% (9/28); social phobia, 0.0% (0/1); separation anxiety, 43.5% (10/23); overanxious disorder, 50.0% (5/10); obsessive-compulsive disorder, 0.0% (0/3); dysthymia, 0.0% (0/1); major depressive disorder, 33.3% (1/3); and functional enuresis, 50.0% (2/4).

Of 56 children who were classified as having one or more *DSM-III-R* diagnoses, 46.6% fell into only 1 category, while the remaining 53.6% fell into 2 or more categories. Generally, high comorbidity rates were found in this sample.

Because there was a relatively wide range of socioeconomic status in this sample, a series of *t* tests were administered for mean scores of annual family income (both in early pregnancy, when mothers were registered, and 8 years after delivery) and parental educational attainment among 4 disorder groups: (1) any disorder (*n* = 54) versus no disorder (*n* = 58); (2) any disruptive behavior disorder (*n* = 18) versus no disorder (*n* = 58); (3) any anxiety disorder (*n* = 47) versus no disorder (*n* = 58); and (4) any depressive disorder (*n* = 4) versus no disorder (*n* = 58). Annual family income at early pregnancy in the any disorder group, any anxiety group, and any disruptive behavior group was significantly lower than in the no disorder group (no disorder versus any disorder: *t* = 3.31, *p* < .01; no disorder versus any disruptive behavior disorder: *t* = 3.53, *p* < .01; no disorder versus any anxiety disorder: *t* = 2.80, *p* < .01). Father's educational attainment among the groups with any disorder, any anxiety disorder, and any disruptive behavior disorder was also lower than in the no disorder group (no disorder versus any disorder: *t* = 2.63, *p* < .05; no disorder versus any disruptive behavior disorder: *t* =

**TABLE 3**  
Prevalence of *DSM-III-R* Disorders at Age 8 Years ( $N = 114$ )

Disorder	Total		Male ( $n = 57$ )		Female ( $n = 57$ )	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
ADHD	12	10.5	9	15.8	3	5.3†
Conduct disorder	4	3.5	2	3.5	2	3.5
Oppositional defiant disorder	7	6.1	4	7.0	3	5.3
Any disruptive behavior disorder	18	15.8	11	19.3	7	12.3
Simple phobia	28	24.6	13	22.8	15	26.3
Social phobia	1	0.9	1	1.8	0	0
Separation anxiety	23	20.2	10	17.5	13	22.8
Overanxious disorder	10	8.8	4	7.0	6	10.5
Obsessive-compulsive disorder	3	2.6	2	3.5	1	1.8
Any anxiety disorder	47	41.2	24	42.1	23	40.4
Dysthymia	1	0.9	1	1.8	0	0
Major depressive disorder	3	2.6	2	3.5	1	1.8
Any depressive disorder	4	3.5	3	5.3	1	1.8
Functional encopresis	0	—	—	—	—	—
Functional enuresis	4	3.5	2	3.5	2	3.5
Any elimination disorder	4	3.5	2	3.5	2	3.5
Any disorder	56	49.1	29	50.9	27	47.4

Note: ADHD = attention-deficit hyperactivity disorder.

†  $p < .10$ .

4.43,  $p < .001$ ; no disorder versus any anxiety disorder:  $t = 2.60$ ,  $p < .05$ ). Those mothers whose children had any disruptive behavior disorder were also lower in their educational attainment than the mothers of children in the no disorder group ( $t = 3.36$ ,  $p < .01$ ). The annual family income when children were 8 years old was not significantly different between the 4 disorder groups and the no disorder group.

#### Comparison With U.S. Data

To compare the prevalence rates in the current study with representative U.S. data from the National Institute of Mental Health Methods for the Epidemiology of Child and Adolescent Mental Disorders Study (MECA study), the rates reported by Shaffer et al. (1996) are presented in Table 5. Although children's ages at the time of

the MECA study (Shaffer et al., 1996) were higher than those in this study (MECA study, ages 9–17 years; present study, ages 7–9 years), our data and those of Shaffer et al. (1996) were used: (1) a nonclinical sample; (2) informants, both children and parents; and (3) the use of diagnostic instruments yielding *DSM-III-R* diagnoses. Reported rates from the Shaffer et al. (1996) study in Table 5 are without any impairment scales, i.e., *DSM-III-R* symptom, onset, and duration criteria only are used.

Table 5 shows that rates of disruptive behavior disorders, 2 anxiety disorders (simple phobia and overanxious disorder), and enuresis in the present study are similar to those of the MECA study. The rates of any disorder are also similar between the 2 studies (the MECA study, 50.6%; this study, 49.1%). Social phobia and major depressive disorder were more likely to occur in the MECA study than in this one, while separation anxiety was more frequent in Japanese children than in U.S. children.

## DISCUSSION

### Japanese Version of the CAS

This study is the first to apply the CAS to Japanese children. To ascertain the scale reliability of the CAS in this population, the internal consistency of the diagnostically

**TABLE 4**  
Overlap of Children's *DSM-III-R* Disorders

	<i>n</i>	Prevalence Rate (%) ( $N = 114$ )
Any disruptive behavior disorder ( $n = 18$ )		
With any anxiety disorder	12	10.5
With any depressive disorder	2	1.8
Any depressive disorder ( $n = 4$ )		
With any anxiety disorder	3	2.6

**TABLE 5**  
Comparison of Prevalence Rates With American Sample  
Using *DSM-III-R* Criteria (Percent)

Diagnosis	Japanese Sample (Age 7-9, N = 114)	Shaffer et al., 1996 (Age 9-17, N = 1,285)
Attention-deficit hyperactivity		
Parent	7.1	4.5
Child	3.5	5.4
Combined	10.5	11.4
Conduct disorder		
Parent	0.9	1.4
Child	2.7	4.4
Combined	3.5	5.8
Oppositional defiant disorder		
Parent	4.4	4.4
Child	1.8	2.2
Combined	6.1	7.1
Any disruptive behavior disorder		
Parent	10.5	8.1
Child	7.9	7.1
Combined	15.8	14.3
Simple phobia		
Parent	12.4	11.7
Child	15.0	11.2
Combined	24.6	21.6
Social phobia		
Parent	0.0	7.9
Child	0.9	8.5
Combined	0.9	15.1
Separation anxiety		
Parent	6.1	2.5
Child	15.0	3.1
Combined	20.2	6.5
Overanxious disorder		
Parent	5.3	4.3
Child	5.3	5.4
Combined	8.8	11.4
Any anxiety disorder <sup>a</sup>		
Parent	18.4	21.0
Child	30.7	23.7
Combined	41.2	39.5
Major depressive disorder		
Parent	0.0	3.1
Child	2.7	4.8
Combined	2.7	7.1
Enuresis <sup>b</sup>		
Parent	3.5	3.8
Child	1.8	1.6
Combined	3.5	4.9
Any disorder		
Parent	27.2	30.3
Child	34.2	32.2
Combined	49.1	50.6

<sup>a</sup> In the Shaffer et al. (1996) article, the "any anxiety" disorder category includes simple phobia, social phobia, agoraphobia, separation anxiety, and overanxious disorder; however, in the present study, that category includes simple phobia, social phobia, separation anxiety, overanxious disorder, and obsessive-compulsive disorder.

<sup>b</sup> In the Shaffer et al. (1996) article, "enuresis" includes nocturnal enuresis only.

related symptom scale of the CAS was analyzed. Considering the magnitudes of the  $\alpha$  coefficient and item number, the internal consistency for the 2 disruptive behavior scales of both the C-CAS and the P-CAS (ADHD and conduct disorder) and overanxious disorder were regarded as acceptable. Also, those of major depressive disorder of the C-CAS were large enough. These results were similar to those of Hodges et al. (1989b) for *DSM-III* diagnoses in U.S. community-based samples. Replications of the present study are needed to determine the causes of the lower internal consistency for oppositional defiant disorder and separation anxiety disorder.

The examination of the relationship between the C-CAS diagnoses of anxiety disorders and the mother-rated CBCL subscales of anxiety suggests that the child's and mother's reports of anxiety symptoms are generally consistent. However, the concurrent validity for disruptive behavior disorders and depressive disorders between the C-CAS and the CBCL were not confirmed. On the other hand, the P-CAS diagnoses of disruptive disorders were consistent with the CBCL. These findings are in partial agreement with the conclusion of several previous studies that showed the parent information correlates more strongly with the clinical diagnoses whose symptoms are externally observable behavior problems, whereas the child's information is more relevant to those diagnoses whose symptoms are felt experiences (e.g., Edelbrock et al., 1986; Hodges, 1993). The validity of the Japanese version of the CAS should be examined further in studies with clinical samples and in studies in which teachers make observational assessments of their pupils.

#### Limitations

Before discussing the findings about prevalence rates, some of the study's limitations should be mentioned. First, no impairment or severity criteria were used in this study, though the global assessment of impairment or dysfunction in daily life caused by symptoms is important for clinical intervention or treatment. Shaffer et al. (1996) recommended that "caseness" was best judged by fulfillment of both diagnostic criteria and diagnosis-specific impairment criteria. In their study, the prevalence rates for any diagnosis decreased from 50.6% (if no impairment criteria were required) to 20.9% if diagnostic criteria with impairment criteria and a revised Children's Global Assessment Scale (Bird et al., unpublished) score of 70 or less was required. Several studies confirmed a similar reduction of prevalence rates when

impairment or severity criteria were applied (e.g., Bird et al., 1988; Esser et al., 1990; Verhulst et al., 1985). In future epidemiological studies of Japanese children, it will be necessary to apply impairment or severity criteria with the diagnostic criteria. Second, our sample size was small and limited geographically. Although demographic features of the sample, i.e., parental educational attainment and annual family income, ranged widely and were similar to the mean of the Japanese population, the subjects of the present study lived in a geographically limited area in Japan. This limits our ability to generalize the findings. Third, for financial reasons, test-retest reliability was not assessed in this study. Some previous studies cautioned that children younger than 9 years old might not be reliable informants (Lahey et al., 1996; Schwab-Stone et al., 1994). Other studies that included young subjects as did the present study (aged 7–9 years), however, showed a good reliability of the child reports on the CAS (Hodges et al., 1982a; Verhulst et al., 1987). To establish reliability of the Japanese version of the CAS, its test-retest reliability needs to be examined. Fourth, there was substantial sample attrition in the present study. To know the representativeness of the respondents in our study, the differences between those who move and those who do not, as well as the differences between those who agree to participate in longitudinal studies and those who do not, need to be examined in future studies.

#### Prevalence Rates Among Japanese Children

With these limitations in mind, however, the prevalence rates found in this study were strikingly similar to those of previous studies in non-Asian countries. Bird et al. (1988), who studied a Puerto Rico population, reported that 49.5 % of children and adolescents (aged 4–16 years) who were interviewed using the DISC (Costello et al., 1984) met any *DSM-III* diagnosis. Comparison with the MECA study (Lahey et al., 1996; Shaffer et al., 1996; the sample's age ranged from 9 to 17 years), a representative epidemiological study for the U.S. population, revealed more commonality than differences. Although social phobia and major depressive disorder were more frequent in the MECA study than in our sample, and separation anxiety was more likely to occur in the Japanese sample, the differences might be explained by the developmental course of these disorders. Kashani et al. (1989) found that the item frequency of

the CAS for separation anxiety declined significantly with increasing age (8, 12, 17 years old), while social embarrassment increased with age. They also reported that the symptom score of depression at 17 years was significantly higher than at age 8 or 12 years. Cohen et al. (1993) found a similar developmental tendency with subjects aged from 10 to 20 years. A review of the prevalence of depression also found general agreement on the increase in adolescents compared with children (Fleming and Offord, 1990). However, another possible explanation involving ethnic or cultural differences may be relevant. For example, Caudill et al. (1966) pointed out the differences in rates of children cosleeping with parents (one of the symptoms of separation anxiety) between U.S. and Japanese families. They found that 91% of Japanese children aged under 6 years slept with their parents. Azuma and Kashiwagi (1981) also reported that the rate at which Japanese children aged 3 years slept with parents was 84%, while the rates for the same-age U.S. children was only 4%. In our sample, the item for cosleeping (“... if you are not sleeping with your parents or near them?”) was agreed to by 15.9% of children (C-CAS) and 22.8% of mothers (P-CAS). However, to examine whether these frequencies have an effect on overestimation of separation anxiety in the Japanese population, cross-cultural investigations of the validity of the diagnostic criteria or structured interview will be needed. In Japan, the discussion on systematic diagnostic criteria for children and adolescents has been activated gradually since the beginning of the 1990s (Yamazaki et al., 1993). Despite the increasing popularity of the *DSM* and the *ICD* systems in Japan, the cultural appropriateness of these have never been investigated thoroughly. The present study showed some similarities between the U.S. children and their Japanese counterparts; however, more efforts need to be made to clarify whether and how the Japanese children might differ from children in other countries.

Gender differences in the prevalence of child and adolescent psychiatric disorders have been a matter of controversy (Cohen et al., 1993). In the current study, no significant gender differences was found for 12 categories of *DSM-III-R* disorders. Although the difference did not reach a significant level, ADHD was more likely to emerge among boys than among girls ( $p < .10$ ). Cohen et al. (1993) found ADHD to be more common in boys than girls, but Kashani et al. (1989) found no significant gender differences.

In this study a very high proportion of Japanese children met criteria for one or more disorders according to the *DSM-III-R*. More than half of children who met any criteria received diagnoses in more than 2 categories, and this proportion is consistent with the previous studies. Cohen et al. (1993) found that 46.1% of Puerto Rico community-based children fell into 2 or more *DSM-III* categories. Similar findings were reported by Woolston et al. (1989), who found that the prevalence of comorbid disruptive behavior disorders and affective/anxiety disorders exceeded 50% in child psychiatric inpatients. Both results and the findings of the present study suggest the need to consider comorbidity when the etiology of children's psychiatric disorders is investigated.

#### Relationships to Demographic Characteristics

The relationship with demographic characteristics was also consistent with several previous studies (e.g., Esser et al., 1990). The findings of the present study suggested that lower family income and parental educational attainment might also be risk factors for the emergence of psychiatric disorders in childhood for the Japanese population. In addition, it is noteworthy that a significant relationship was found between the occurrence of children's disorders and the annual family income, not when children were 8 years old, but when the mothers were pregnant. Thus, the effect of family adversity on children's psychopathology may be more powerful in an earlier developmental stage. Further analyses for risk factors and protective factors for the development of children's psychopathology will be conducted in future studies using our longitudinal data.

#### Clinical Implications

As Costello et al. (1993) pointed out, epidemiological information can help improve mental health services multilaterally. Information about prevalence is necessary primarily to plan national and local policies for prevention and treatment services for children and adolescents. The present study found that the number of young children with mental illness in Japan is not small and is similar to that found in the U.S. and in other Western countries. Serious discussion about the development of research and service provision in Japan, and perhaps also in other countries where epidemiological studies of young children are lacking, should be activated.

High comorbidity rates of childhood disorders were found in the Japanese sample. Given this finding,

Japanese clinicians should pay more attention to a wider range of symptoms displayed by the children. The use of operational diagnostic criteria such as *DSM-III-R* and *DSM-IV* criteria is not yet a common practice in Japanese child psychiatry. To facilitate the identification of the presence of more than one disorder in clients, the use of these objective diagnostic tools is recommended.

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**Transition From School to Adult Life for Physically Disabled Young People.** L. Fiorentino, D. Datta, S. Gentle, D.M.B. Hall, V. Harpin, D. Phillips, A. Walker

The transition process for young physically disabled people (n = 87) was studied in three districts to determine how it varied between schools, and how it was perceived by the disabled and their carers. The experiences of the young people were compared with guidelines for good practice based on relevant legislation. Results showed that young disabled people experienced a poor handover to adult services if they had no "statement of special educational need" or if they went to further education college. Young people with cerebral palsy or complex multiple problems fared less well than those with spina bifida or juvenile chronic arthritis. There are several deficiencies in the legislation. Physically disabled young people should receive a transition review regardless of whether they have a "statement." The range of severity and type of disorders among the young physically disabled argues for a range of services—the category is too broad to be useful for research, service planning, and provision. *Arch Dis Child* 1998;79:306-311