

Psychiatric Disorders in Preschoolers: Continuity From Ages 3 to 6

Sara J. Bufferd, Ph.D.

Lea R. Dougherty, Ph.D.

Gabrielle A. Carlson, M.D.

Suzanne Rose, M.A.

Daniel N. Klein, Ph.D.

Objective: Recent studies indicate that many preschoolers meet diagnostic criteria for psychiatric disorders. However, data on the continuity of these diagnoses are limited, particularly from studies examining a broad range of disorders in community samples. Such studies are necessary to elucidate the validity and clinical significance of psychiatric diagnoses in young children. The authors examined the continuity of specific psychiatric disorders in a large community sample of preschoolers from the preschool period (age 3) to the beginning of the school-age period (age 6).

Method: Eligible families with a 3-year child were recruited from the community through commercial mailing lists. For 462 children, the child's primary caretaker was interviewed at baseline and again when the child was age 6, using the parent-report Preschool Age Psychiatric Assessment, a comprehensive diagnostic interview. The

authors examined the continuity of DSM-IV diagnoses from ages 3 to 6.

Results: Three-month rates of disorders were relatively stable from age 3 to age 6. Children who met criteria for any diagnosis at age 3 were nearly five times as likely as the others to meet criteria for a diagnosis at age 6. There was significant homotypic continuity from age 3 to age 6 for anxiety, attention deficit hyperactivity disorder (ADHD), and oppositional defiant disorder, and heterotypic continuity between depression and anxiety, between anxiety and oppositional defiant disorder, and between ADHD and oppositional defiant disorder.

Conclusions: These results indicate that preschool psychiatric disorders are moderately stable, with rates of disorders and patterns of homotypic and heterotypic continuity similar to those observed in samples of older children.

(*Am J Psychiatry* 2012; 169:1157–1164)

Recent studies suggest that many preschool-age children meet diagnostic criteria for psychiatric disorders (1–7). Indeed, rates of psychopathology may be as prevalent in preschoolers as in school-age children (8). While this suggests the importance of the preschool period for early identification and intervention, there is considerable skepticism regarding the validity of psychiatric diagnoses in preschoolers (9). This skepticism derives from several sources. First, existing symptom scales, generally based on measures developed for older youths and adults, may not adequately distinguish developmentally normative behavior from psychopathology in young children (10, 11). Second, preschool assessment can be complicated by the rapid developmental changes in language, cognition, emotion, and social behavior that characterize this period (8). Finally, there is a widespread belief that young children will “grow out” of their problems, as well as concern that diagnoses will result in stigmatization (9).

Longitudinal studies are among the principal means of evaluating the validity of psychiatric diagnoses (12). Given the controversial status of early childhood psychopathology, there is a pressing need for research on the course

and stability of preschool psychiatric disorders to elucidate their clinical significance and future implications. The existing literature has several limitations. First, most studies have examined a limited range of disorders, with the majority focusing on externalizing problems such as oppositionality, attention deficits, hyperactivity, and impulsivity (13–17). These studies show that externalizing disorders are moderately stable through school age, suggesting that many children do not “grow out” of their behavioral problems. Less is known about the stability of internalizing problems in preschoolers, and findings of studies in this area are less consistent (18–23). These studies suggest that although internalizing problems often persist through school age, they may be less stable than externalizing problems.

A second limitation is that most longitudinal studies of preschool psychopathology have used parent rating scales rather than diagnostic interviews (e.g., 10, 21–23). Although parent rating scales laid the foundation for the field of preschool psychopathology (24), these measures provide few details about the nature, duration, and clinical significance of symptoms and do not permit an evaluation of the prevalence or stability of diagnoses. A few studies

This article is featured in this month's AJP **Audio**, is discussed in an **Editorial** by Dr. Luby (p. 1127), and is the subject of a **CME** course (p. 1219)

have assessed psychopathology in preschoolers using respondent-based structured diagnostic interviews (e.g., 5), which rely on the parents', rather than the researchers', judgment to rate symptoms. This may be problematic for preschool psychopathology, given the difficulty of distinguishing normative, transient behavior from clinically significant symptoms. In contrast, with interviewer-based instruments, raters employ their clinical experience or a detailed glossary to determine whether participants' descriptions meet specified criteria for each symptom.

Finally, previous studies are limited by relatively small samples, often considered high-risk (23) or drawn from social service (18), psychiatric (13, 25), or primary care (13, 15, 19, 26) settings. To our knowledge, there have been no follow-up studies in large community samples that used structured diagnostic interviews to assess a broad range of psychiatric disorders during the preschool period.

In this study, we examined the continuity of specific psychiatric disorders in a large community sample of preschoolers using a comprehensive diagnostic interview designed for this population (27). We examined the stability of 3-month rates of disorders from the preschool period (age 3) to the beginning of the school-age period (age 6). We compared rates of diagnoses at ages 3 and 6 and examined the homotypic and heterotypic continuity of disorders.

Method

Participants

Families with a 3-year-old child living within 20 miles of Stony Brook, New York, were eligible to participate in a larger study of temperament and psychopathology (28); children with significant medical or developmental disorders were excluded. We used commercial mailing lists to recruit participants. Compared with other methods, such as random digit dialing, commercial mailing lists are more cost-effective in targeting a small subgroup of the population (such as families with a 3-year-old) and produce samples with similar characteristics (29).

Of the 815 families identified as eligible, 66.4% entered the study and a parent was interviewed about the child ($N=541$). There were no significant differences between families that participated and those that did not on child sex and race/ethnicity and parental marital status, education, and employment status. Participating parents provided written informed consent after receiving a complete description of the study. The study was approved by the human subjects review committee at Stony Brook University, and families were compensated for participating.

The parent who served as primary caretaker was interviewed regarding his or her 3-year-old child. For 462 children (85.4%), the parent was interviewed again when the child was 6 years old. At the age 3 assessment, interviews were conducted by telephone; at the age 6 assessment, interviews were conducted in person. In a comparison of children who completed both assessments with those who completed only the first assessment, only one significant difference was observed in age 3 demographic variables and diagnoses: 85.9% of children without depression at age 3 (456/531) participated at age 6, whereas only 60.0% of children with depression at age 3 (6/10) participated at age 6 ($\chi^2=5.27$, $df=1$, 541 , $p<0.05$).

Table 1 presents demographic information about the study sample. As detailed elsewhere (2), the sample's demographic

characteristics were reasonably representative of the surrounding county.

Measures

Child psychopathology. The Preschool Age Psychiatric Assessment (3, 27) is the first published diagnostic interview designed to assess a comprehensive range of DSM-IV disorders in children 2 to 5 years of age. DSM-IV diagnoses were derived using algorithms created by the instrument's developers. Symptoms that have occurred during the 3 months preceding the interview are rated to maximize recall. Emotional disorders included any depressive disorder (major depressive disorder, dysthymic disorder, or depression not otherwise specified) or anxiety disorder (specific phobia, separation anxiety disorder, social phobia, generalized anxiety disorder, agoraphobia, selective mutism); behavioral disorders included attention deficit hyperactivity disorder (ADHD) and oppositional defiant disorder. Panic disorder was assessed, but none of the children met criteria.

At the age 3 assessment, interviews were conducted by advanced graduate students in clinical psychology who received training from an experienced interviewer from the group that developed the interview. Assessments usually lasted about 1 hour and were conducted by telephone. We used telephone interviews because parents had to be present during laboratory assessments (28) with the child, and we felt it would be too burdensome to require an additional visit to the laboratory. A second rater from the pool of interviewers independently rated audiotapes of 21 interviews. The interviews were randomly selected, but we oversampled from participants who reported problems in their children to ensure some variability. Kappa values were 1.00 for all diagnoses.

At the age 6 assessment, interviews were conducted by a master's-level psychologist with extensive experience with structured diagnostic interviews and training on the Preschool Age Psychiatric Assessment. This interviewer was blind to results of the age 3 assessments. The age 6 interviews were conducted face-to-face with the parent while the child participated in other laboratory assessments. Diagnostic interviews with parents regarding their children have yielded equivalent results when administered by telephone and face-to-face (30). A second diagnostician (an advanced graduate student trained on the interview) rated audiotapes of 35 interviews, again oversampling participants with psychopathology. Kappa values were 0.64 for depression, 0.89 for any anxiety disorder, 1.00 for separation anxiety, 0.79 for specific phobia, 1.00 for agoraphobia, 0.64 for ADHD, and 0.87 for oppositional defiant disorder (neither rater diagnosed other anxiety disorders in this subsample).

Early Childhood Inventory-4. At the age 3 assessment, parents completed the ADHD and oppositional defiant disorder sections of the Early Childhood Inventory-4, a parent-rated scale used to screen for DSM-IV disorders in 3- to 6-year-olds (31). In this sample, alpha coefficients for the Early Childhood Inventory-4 were 0.79 for ADHD-inattention, 0.82 for ADHD-hyperactivity/impulsivity, and 0.85 for oppositional defiant disorder. Because of our concerns about the time required to administer the questionnaire at the age 3 assessment, the ADHD and oppositional defiant disorder scales of the Early Childhood Inventory-4 were used in the first 60% of the sample ($N=324$) as a screen to help determine whether to complete these sections of the Preschool Age Psychiatric Assessment. If evidence from the screener indicated that the child was unlikely to meet diagnostic criteria for ADHD and oppositional defiant disorder, the interviewer briefly confirmed the absence of these symptoms with the parent and skipped the relevant section(s) of the interview. In the remaining 40% of the sample ($N=217$), the ADHD and

TABLE 1. Demographic Characteristics of a Sample of Community Children (N=462) and Parents in a Study of the Continuity of Psychopathology From Age 3 to Age 6

Variable	Age 3 Assessment		Age 6 Assessment	
	Mean	SD	Mean	SD
Child's age (years)	3.6	0.3	6.1	0.4
Mother's age (years)	36.1	4.5	38.6	4.5
Father's age (years)	38.3	5.4	40.8	5.4
	N	%	N	%
Child's sex, female	212	45.9		
Child's race/ethnicity				
White/non-Hispanic	401	86.8		
Hispanic	39	8.4		
Black/African American	7	1.5		
Asian	9	2.0		
Other	6	1.3		
Child's school status				
Kindergarten			235	50.9
First grade			187	40.5
Second grade			20	4.3
Other (e.g., home school)			20	4.3
Interview respondent				
Mother	451	97.6	426	92.2
Father	8	1.7	35	7.6
Both parents	1	0.2	0	0.0
Grandparent	2	0.4	1	0.2
Parents' marital status				
Married	435	94.2	413	89.4
Divorced, separated, or widowed	9	1.9	32	6.9
Never married	18	3.9	17	3.7
Parents graduated from college ^a				
Mother	258	56.7	245	59.3
Father	209	46.7	195	47.8

^a At the age 3 assessment, 1.5% (N=7) of the mothers and 3.0% (N=14) of the fathers did not report their education level. At the age 6 assessment, 10.6% (N=49) of the mothers and 11.7% (N=54) of the fathers did not report their education level.

oppositional defiant disorder sections of the Preschool Age Psychiatric Assessment were administered to all parents. All results were similar in the two subsamples.

Data Analysis

Anxiety disorders were analyzed as individual disorders and as an aggregate category. Depressive disorders were analyzed only as a single category because of their low prevalence. McNemar's tests were used to compare rates of diagnoses between the age 3 and age 6 assessments. To examine associations between diagnoses over time, odds ratios were computed using logistic regression with age 3 diagnoses entered as independent variables and age 6 diagnoses entered as dependent variables. Unadjusted odds ratios and adjusted odds ratios, controlling for comorbidity at age 3 in the heterotypic analyses, are presented along with 95% confidence intervals (CIs). Tests were two-tailed, and alpha was set at 0.05.

Results

Rates of Diagnoses

Table 2 lists the rates of diagnoses at the age 3 and age 6 assessments; there were no sex differences associated with diagnoses at either assessment. The prevalence of any psychiatric disorder was similar at age 3 and age 6.

Meeting criteria for a diagnosis at age 3 was associated with an almost fivefold greater risk of meeting criteria for a diagnosis at age 6 (odds ratio=4.74, p<0.001, 95% CI=3.04–7.43). Of children who met criteria for a diagnosis at age 3, 50.4% (64/127) met criteria for a diagnosis again at age 6. Conversely, 52.0% (64/123) of children who met criteria for a diagnosis at age 6 previously met criteria for a diagnosis at age 3. Overall, 13.9% (64/462) of the sample met criteria for a disorder at both time points.

Rates of any emotional, anxiety, or behavioral disorder did not change between the two assessments. However, there was a significant increase in the rate of any depression. Of the 10 specific disorders assessed, there was a significant increase in ADHD and a significant decrease in generalized anxiety disorder; rates of the other diagnoses did not change.

Homotypic Continuity

There was significant homotypic continuity between age 3 and age 6 anxiety, ADHD, and oppositional defiant disorder (Table 3). The homotypic analysis could not be computed for depression because none of the few cases at age 3 remained a case at age 6. Analyses were also conducted with each of the specific anxiety disorder

TABLE 2. Three-Month Rates of Diagnoses in a Sample of Community Children (N=462) at Age 3 and Age 6

Disorder	Age 3 Assessment			Age 6 Assessment		
	N	%	95% CI	N	%	95% CI
Any diagnosis ^a	127	27.5	23.5–31.9	123	26.6	22.8–30.8
Any emotional disorder	91	19.7	16.2–23.7	87	18.8	15.5–22.7
Any depression ^b	6	1.3	0.6–2.8	25	5.4	3.7–7.9
Major depression or dysthymia	2	0.4	0.1–1.6	15	3.2	2.0–5.3
Depression not otherwise specified	4	0.9	0.3–2.2	10	2.2	1.2–3.9
Any anxiety disorder	89	19.3	15.9–23.1	72	15.6	12.6–19.2
Specific phobia	44	9.5	7.2–12.5	38	8.2	6.1–11.1
Separation anxiety	26	5.6	3.9–8.1	22	4.8	3.2–7.1
Social phobia	17	3.7	2.3–5.8	10	2.2	1.2–3.9
Generalized anxiety disorder ^b	18	3.9	2.5–6.1	7	1.5	0.7–3.1
Agoraphobia	15	3.2	2.0–5.3	8	1.7	0.9–3.4
Selective mutism	7	1.5	0.7–3.1	3	0.6	0.2–1.9
Any behavioral disorder	51	11.0	8.4–14.3	57	12.3	9.7–15.7
ADHD ^b	11	2.4	1.3–4.2	25	5.4	3.7–7.9
Oppositional defiant disorder	47	10.2	7.7–13.3	41	8.9	6.6–11.8
Two or more diagnoses	42	9.1	6.8–12.1	41	8.9	6.6–11.8

^a When diagnoses of depression not otherwise specified are excluded, the overall prevalence of any diagnosis remains the same at age 3 and changes to 26.4% (N=122) at age 6.

^b Significant difference between groups at p<0.05.

TABLE 3. Logistic Regression Analyses With Age 3 Diagnoses Predicting Age 6 Diagnoses in a Sample of Community Children (N=462)^a

Diagnosis at Age 3	Diagnosis at Age 6							
	Depression		Anxiety		ADHD		Oppositional Defiant Disorder	
	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI
Depression			5.61*	1.11–28.36	3.60	0.41–32.04	5.35 [†]	0.95–30.12
			3.21	0.58–17.74	N/A		1.67	0.25–11.12
Anxiety	2.51*	1.07–5.88	4.01***	2.32–6.91	1.35	0.52–3.48	2.39*	1.20–4.78
	2.63*	1.12–6.17			N/A		N/A	
ADHD	1.78	0.22–14.48	0.54	0.07–4.25	17.96***	5.05–63.86	9.61***	2.80–33.02
	N/A		N/A				3.71 [†]	0.92–14.88
Oppositional defiant disorder	2.35	0.83–6.59	1.32	0.61–2.87	7.21***	3.03–17.17	8.05***	3.90–16.65
	2.59 [†]	0.92–7.28	N/A		4.87**	1.87–12.72		

^a The homotypic analysis could not be not computed for depression because there were no age 3 cases that remained cases at age 6. The second row of values reflects analyses conducted to control for concurrent age 3 comorbidity in the heterotypic analyses. “N/A” indicates no comorbid associations to control.

[†]p<0.10; *p<0.05; **p<0.01; ***p<0.001.

diagnoses. There was significant continuity between five of the six anxiety disorders examined: specific phobia (odds ratio=2.87, p<0.05, 95% CI=1.23–6.73), separation anxiety (odds ratio=7.88, p<0.001, 95% CI=2.78–22.28), social phobia (odds ratio=60.14, p<0.001, 95% CI=14.84–243.74), agoraphobia (odds ratio=22.10, p<0.001, 95% CI=4.73–103.29), and selective mutism (odds ratio=37.75, p<0.01, 95% CI=3.00–474.83). Homotypic continuity did not differ as a function of sex.

Heterotypic Continuity

There was significant heterotypic continuity between age 3 depression and age 6 anxiety, age 3 anxiety and age 6 depression, age 3 anxiety and age 6 oppositional defiant disorder, age 3 ADHD and age 6 oppositional defiant disorder, and age 3 oppositional defiant disorder and age 6

ADHD; the results for age 3 depression and age 6 oppositional defiant disorder approached but fell short of statistical significance (Table 3). After controlling for any significant concurrent age 3 comorbidity (see reference 2), the results remained significant for each of these associations, with the exception of age 3 depression with age 6 anxiety; for age 3 ADHD with age 6 oppositional defiant disorder, the association approached but fell short of significance. Heterotypic continuity did not differ as a function of sex.

These analyses were also conducted with each of the anxiety disorders (Table 4). There were significant associations of age 3 depression with age 6 separation anxiety and age 6 social phobia; age 3 social phobia with age 6 specific phobia; age 3 separation anxiety with age 6 depression, age 6 oppositional defiant disorder, and age 6 agoraphobia; age 3 agoraphobia with age 6 depression, age

6 specific phobia, age 6 social phobia, age 6 generalized anxiety disorder, and age 6 selective mutism; and age 3 selective mutism with age 6 generalized anxiety disorder. Results were similar after controlling for concurrent age 3 comorbidity, with two exceptions: age 3 separation anxiety no longer predicted age 6 agoraphobia and age 3 agoraphobia no longer predicted age 6 social anxiety. There were no sex differences in patterns of continuity.

Discussion

To our knowledge, this is the first study to examine the stability of specific psychiatric disorders in a large community sample of preschoolers using a comprehensive diagnostic interview and a prospective longitudinal design. At both the age 3 and age 6 assessments, approximately a quarter of the sample met criteria for a diagnosis within the previous 3 months. The overall rate of disorders did not change over this period. Half the children who met criteria for a diagnosis at age 3 again met criteria for a diagnosis at age 6, and about half the children who met criteria for a diagnosis at age 6 had met criteria for a diagnosis at age 3. Overall, children who met criteria for a diagnosis at age 3 were nearly five times as likely as other children to meet criteria for a diagnosis again at age 6.

Previous studies have reported that substantial numbers of preschoolers meet criteria for a psychiatric diagnosis (1–8). Our findings here indicate that many of these children continue to exhibit psychopathology 3 years later, which supports the validity of Preschool Age Psychiatric Assessment DSM-IV diagnoses in preschoolers and indicates that for many children these are not transient problems that are rapidly outgrown. However, this does not preclude the possibility that some of our cases were false positives exhibiting developmentally normative levels of particular behaviors; more work is needed to determine the threshold between normal and pathological behavior in early childhood (11). In other cases, there may be personal or environmental factors that promote recovery in preschoolers with psychiatric disorders. We plan to examine this issue in future analyses. Finally, these results cannot be generalized to other classification systems. The organization Zero to Three has an alternative diagnostic system for young children (32), but few data are available on its reliability and validity (9).

Although the rates of most disorders were similar at ages 3 and 6, there was a significant increase in rates of depression and ADHD and a decrease in generalized anxiety disorder. Previous research suggests that depression is diagnosed more often in older rather than younger preschool-age children (8, 20). The increase in the rate of depression may reflect children’s growing ability to vocalize distress, which would raise parents’ awareness of these symptoms. This increase may also reflect an actual change in the rate of depression as children transition to school age, when they face increasing performance demands and

TABLE 4. Significant Associations With Individual Anxiety Diagnoses in Logistic Regression Analyses With Age 3 Diagnoses Predicting Age 6 Diagnoses in a Sample of Community Children (N=462)

Age 3 Diagnosis	Age 6 Diagnosis	Odds Ratio	95% CI
Depression	Separation anxiety	10.90**	1.88–63.08
	Social phobia	9.93*	1.05–93.88
Social phobia	Specific phobia	5.20**	1.73–15.67
Separation anxiety disorder	Depression	4.95**	1.69–14.49
	Oppositional defiant disorder	6.68***	2.76–16.19
Agoraphobia	Agoraphobia	5.97*	1.14–31.17
	Depression	4.83*	1.27–18.37
	Social phobia	15.71***	3.62–68.28
	Specific phobia	4.42*	1.34–14.62
Generalized anxiety disorder	Generalized anxiety disorder	13.60**	2.41–76.72
	Selective mutism	15.89*	1.36–185.78
	Generalized anxiety disorder	12.47*	1.30–120.13

*p<0.05; **p<0.01; ***p<0.001.

develop a growing tendency to compare themselves with others, perhaps less favorably (33). The increase in rates of ADHD is consistent with other research (34) and may reflect the fact that symptoms are more impairing and easier to recognize as children enter formal schooling, requiring them to function in increasingly demanding social and academic contexts and maintain greater control over their behavior. The reason for the decrease in the rate of generalized anxiety disorder is less clear, and there are few data on this condition in preschoolers to elucidate it (35). It is possible that the developmentally normative inquisitive nature of younger children (36) is perceived as worrying by some parents. The importance of studying worry in young children (3, 35) is underscored by this unexpected finding.

There was significant homotypic continuity between age 3 and age 6 for anxiety disorders, ADHD, and oppositional defiant disorder, as well as for five of the six individual anxiety disorders. Little research has been conducted on the stability of a broad range of specific disorders assessed with a diagnostic interview in community samples of preschoolers, and there are no comparable data on the stability of individual preschool anxiety disorders. Similar to our findings, other studies have reported that preschoolers with ADHD (14, 17) and oppositional defiant disorder (13) are likely to continue to meet criteria for these disorders into school age, although the degree of continuity varied across these few studies. One study reported significant homotypic continuity for preschool depression (20) in the context of a case-control design. Although we did not observe homotypic continuity of depression, too few children had depression diagnoses at age 3 to examine this question in a meaningful fashion.

We found heterotypic continuity between depression and anxiety, anxiety and oppositional defiant disorder, and

ADHD and oppositional defiant disorder. The magnitudes of the odds ratios were largely similar across homotypic and heterotypic analyses (although caution is warranted in making comparisons, given the large standard errors), suggesting that there is both stability and change in diagnostic status over time. Depression and anxiety disorders at age 3 each predicted the other at age 6, which is consistent with findings in school-age children, adolescents, and adults (37, 38). In addition, ADHD and oppositional defiant disorder at age 3 each predicted the other disorder at age 6. However, results were attenuated somewhat when we controlled for concurrent age 3 comorbidity. Age 3 agoraphobia was associated with multiple age 6 diagnoses: depression, specific phobia, social phobia, generalized anxiety disorder, and selective mutism. Although the meaning of agoraphobia in early childhood is unclear, these findings warrant further investigation. The observed heterotypic pathways may reflect causal effects, shared risk factors, or different expressions of similar processes (39); these results point to the importance of a better understanding of changing phenotypes across development (11).

While homotypic continuity is central to the classic Robins and Guze (12) framework for validating psychiatric diagnoses, the role of heterotypic continuity is more ambiguous. If it is viewed as one disorder changing into a distinctly different disorder, it would indicate poor validity. However, if heterotypic continuity represents two phases or alternative presentations of a single disorder, as is often assumed, this supports validity, albeit for a broader diagnostic construct. Unfortunately, it is difficult to distinguish between these scenarios without a firm understanding of the underlying processes.

We are aware of only one longitudinal study that assessed psychiatric disorders in a large sample of preschool-age children from ages 2–5 to age 7 (19). Similar to our findings, that study reported moderate diagnostic stability, which was greater for externalizing disorders than for emotional disorders. However, structured diagnostic interviews were not used, and only broad diagnostic categories (i.e., emotional, disruptive, and other disorders) were examined.

In evaluating these results, a number of limitations should be considered. First, although retention was relatively high, almost 15% of the children assessed at age 3 could not be assessed at age 6. However, there were few differences between participants and dropouts, suggesting that any bias due to attrition is likely to be small. Second, interviews with parents were conducted by telephone for the age 3 assessment and face-to-face for the age 6 assessment. However, diagnostic interviews with parents regarding their children have yielded equivalent results when administered by telephone and face-to-face (30). Third, we used a screen for ADHD and oppositional defiant disorder to reduce administration time for the first 60% of the sample in the age 3 assessment. However, given the interviewers' confirmation of negative screens, the false negative rate was probably

quite low. In addition, results were comparable for the two parts of the sample. Fourth, diagnoses were based on interviews with one parent. Incorporating data from other sources (e.g., a second caretaker, observation of the child) and confirmation of diagnoses by an experienced child psychiatrist or psychologist would provide a more comprehensive assessment and minimize biases associated with a single informant. Fifth, given the small number of cases of major depression or dysthymia, depression not otherwise specified was included in the "any depression" group, which may have increased the heterogeneity of this category. Sixth, the 3-month primary period may have limited our ability to identify cases with onset and remission occurring prior to this period or between assessments. This issue may be particularly problematic for episodic disorders such as depression. Seventh, the use of audiotapes to assess interrater reliability produced high-end estimates compared with independent interviews. Eighth, for some of the continuity analyses, the confidence intervals were relatively large. Finally, the sample was largely white and middle-class. Although this mirrored the demographic characteristics of the area, the stability of preschool psychiatric disorders should be examined in more diverse samples. Indeed, disorders may be more persistent in environments characterized by high levels of stress and adversity (40).

In summary, this is the first study to examine the stability of a wide range of specific psychiatric disorders in a large community sample of preschoolers using a comprehensive diagnostic interview and a prospective longitudinal design. We found that Preschool Age Psychiatric Assessment DSM-IV diagnoses were moderately stable and that children with a diagnosis at age 3 had a fivefold greater risk of meeting criteria for a diagnosis at age 6. These data support the validity of preschool psychiatric diagnoses and underscore the importance of early identification and intervention in preschoolers to prevent chronicity and recurrence.

Presented in part at the 25th annual meeting of the Society for Research in Psychopathology, Boston, Sept. 22–25, 2011, and the 58th annual meeting of the American Academy of Child and Adolescent Psychiatry, Toronto, Oct. 18–23, 2011. Received Feb. 24, 2012; revisions received May 21, June 9, and June 22, 2012; accepted June 25, 2012 (doi: 10.1176/appi.ajp.2012.12020268). From the Departments of Psychology and Psychiatry and Behavioral Science, Stony Brook University, Stony Brook, New York. Dr. Bufferd is now at California State University San Marcos. Address correspondence to Dr. Bufferd (sbufferd@csusm.edu).

Dr. Carlson has received funding from Bristol-Myers Squibb, GlaxoSmithKline, Merck, and Pfizer. The other authors report no financial relationships with commercial interests.

Supported by NIMH grants F31 MH084444 (Ruth L. Kirschstein National Research Service Award, to Dr. Bufferd) and R01 MH069942 (to Dr. Klein), and General Clinical Research Center grant M01 RR10710 (Stony Brook University, National Center for Research Resources).

References

1. Birmaher B, Ehmann M, Axelson DA, Goldstein BI, Monk K, Kalas C, Kupfer D, Gill MK, Leibenluft E, Bridge J, Guyer A, Egger HL,

- Brent DA: Schedule for affective disorders and schizophrenia for school-age children (K-SADS-PL) for the assessment of preschool children: a preliminary psychometric study. *J Psychiatr Res* 2009; 43:680–686
2. Bufferd SJ, Dougherty LR, Carlson GA, Klein DN: Parent-reported mental health in preschoolers: findings using a diagnostic interview. *Compr Psychiatry* 2011; 52:359–369
 3. Egger HL, Erkanli A, Keeler G, Potts E, Walter BK, Angold A: Test-retest reliability of the Preschool-Age Psychiatric Assessment (PAPA). *J Am Acad Child Adolesc Psychiatry* 2006; 45: 538–549
 4. Keenan K, Shaw DS, Walsh B, Delliquadri E, Giovannelli J: DSM-III-R disorders in preschool children from low-income families. *J Am Acad Child Adolesc Psychiatry* 1997; 36: 620–627
 5. Lavigne JV, LeBailly SA, Hopkins J, Gouze KR, Binns HJ: The prevalence of ADHD, ODD, depression, and anxiety in a community sample of 4-year-olds. *J Clin Child Adolesc Psychol* 2009; 38:315–328
 6. Scheeringa MS, Haslett N: The reliability and criterion validity of the Diagnostic Infant and Preschool Assessment: a new diagnostic instrument for young children. *Child Psychiatry Hum Dev* 2010; 41:299–312
 7. Lavigne JV, Gibbons RD, Christoffel KK, Arend R, Rosenbaum D, Binns H, Dawson N, Sobel H, Isaacs C: Prevalence rates and correlates of psychiatric disorders among preschool children. *J Am Acad Child Adolesc Psychiatry* 1996; 35:204–214
 8. Egger HL, Angold A: Common emotional and behavioral disorders in preschool children: presentation, nosology, and epidemiology. *J Child Psychol Psychiatry* 2006; 47:313–337
 9. Egger HL, Emde RN: Developmentally sensitive diagnostic criteria for mental health disorders in early childhood: the Diagnostic and Statistical Manual of Mental Disorders–IV, the Research Diagnostic Criteria–Preschool Age, and the Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood–Revised. *Am Psychol* 2011; 66:95–106
 10. Briggs-Gowan MJ, Carter AS, Bosson-Heenan J, Guyer AE, Horwitz SM: Are infant-toddler social-emotional and behavioral problems transient? *J Am Acad Child Adolesc Psychiatry* 2006; 45: 849–858
 11. Wakschlag LS, Leventhal BL, Thomas J, Pine DS: Disruptive behavior disorders and ADHD in preschool children: characterizing heterotypic continuities for a developmentally informed nosology for DSM-V, in *Age and Gender Considerations in Psychiatric Diagnosis: A Research Agenda for DSM-V*. Edited by Regier D, First M, Narrow W. Washington, DC, American Psychiatric Publishing, Inc, 2007, pp 243–258
 12. Robins E, Guze SB: Establishment of diagnostic validity in psychiatric illness: its application to schizophrenia. *Am J Psychiatry* 1970; 126:983–987
 13. Keenan K, Boeldt D, Chen D, Coyne C, Donald R, Duax J, Hart K, Perrott J, Strickland J, Danis B, Hill C, Davis S, Kampani S, Humphries M: Predictive validity of DSM-IV oppositional defiant and conduct disorders in clinically referred preschoolers. *J Child Psychol Psychiatry* 2011; 52:47–55
 14. Harvey EA, Youngwirth SD, Thakar DA, Errazuriz PA: Predicting attention-deficit/hyperactivity disorder and oppositional defiant disorder from preschool diagnostic assessments. *J Consult Clin Psychol* 2009; 77:349–354
 15. Lavigne JV, Cicchetti C, Gibbons RD, Binns HJ, Larsen L, DeVito C: Oppositional defiant disorder with onset in preschool years: longitudinal stability and pathways to other disorders. *J Am Acad Child Adolesc Psychiatry* 2001; 40:1393–1400
 16. Owens EB, Shaw DS: Predicting growth curves of externalizing behavior across the preschool years. *J Abnorm Child Psychol* 2003; 31:575–590
 17. Lahey BB: Commentary: role of temperament in developmental models of psychopathology. *J Clin Child Adolesc Psychol* 2004; 33:88–93
 18. Keenan K, Shaw DS, Delliquadri E, Giovannelli J, Walsh B: Evidence for the continuity of early problem behaviors: application of a developmental model. *J Abnorm Child Psychol* 1998; 26: 441–452
 19. Lavigne JV, Arend R, Rosenbaum D, Binns HJ, Christoffel KK, Gibbons RD: Psychiatric disorders with onset in the preschool years, I: stability of diagnoses. *J Am Acad Child Adolesc Psychiatry* 1998; 37:1246–1254
 20. Luby JL, Si X, Belden AC, Tandon M, Spitznagel E: Preschool depression: homotypic continuity and course over 24 months. *Arch Gen Psychiatry* 2009; 66:897–905
 21. Mian ND, Wainwright L, Briggs-Gowan MJ, Carter AS: An ecological risk model for early childhood anxiety: the importance of early child symptoms and temperament. *J Abnorm Child Psychol* 2011; 39:501–512
 22. Mesman J, Koot HM: Early preschool predictors of pre-adolescent internalizing and externalizing DSM-IV diagnoses. *J Am Acad Child Adolesc Psychiatry* 2001; 40:1029–1036
 23. Egeland B, Kalkoske M, Gottesman N, Erickson MF: Preschool behavior problems: stability and factors accounting for change. *J Child Psychol Psychiatry* 1990; 31:891–909
 24. Achenbach TM: *Manual for the Child Behavior Checklist/4-18 and 1991 Profiles*. Burlington, Vt, University of Vermont, Department of Psychiatry, 1991
 25. Speltz ML, McClellan J, DeKlyen M, Jones K: Preschool boys with oppositional defiant disorder: clinical presentation and diagnostic change. *J Am Acad Child Adolesc Psychiatry* 1999; 38: 838–845
 26. Lavigne JV, Gibbons RD, Arend R, Rosenbaum D, Binns HJ, Christoffel KK: Rational service planning in pediatric primary care: continuity and change in psychopathology among children enrolled in pediatric practices. *J Pediatr Psychol* 1999; 24: 393–403
 27. Egger HL, Ascher BH, Angold A: *The Preschool Age Psychiatric Assessment: Version 1.1*. Durham, NC, Duke University Medical Center, Department of Psychiatry and Behavioral Sciences, Center for Developmental Epidemiology, 1999
 28. Dougherty LR, Bufferd SJ, Carlson GA, Dyson MW, Olino TM, Klein DN: Preschoolers' observed temperament and psychiatric disorders assessed with a parent diagnostic interview. *J Clin Child Adolesc Psychol* 2011; 40:295–306
 29. Olson SH, Mignone L, Harlap S: Selection of control groups by using a commercial database and random digit dialing. *Am J Epidemiol* 2000; 152:585–592
 30. Lyneham HJ, Rapee RM: Agreement between telephone and in-person delivery of a structured interview for anxiety disorders in children. *J Am Acad Child Adolesc Psychiatry* 2005; 44:274–282
 31. Gadow KD, Sprafkin J: *Early Childhood Inventory–4: Screening Manual*. Stony Brook, NY, Checkmate Plus, 2000
 32. *Zero to Three: Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood, Revised Edition*. Washington, DC, Zero to Three Press; 2005
 33. Cole DA, Jacquez FM, Maschman TL: Social origins of depressive cognitions: a longitudinal study of self-perceived competence in children. *Cognit Ther Res* 2001; 25:377–395
 34. Egger HL, Kondo D, Angold A: The epidemiology and diagnostic issues in preschool attention-deficit/hyperactivity disorder: a review. *Infants Young Child* 2006; 19:109–122
 35. Kertz SJ, Woodruff-Borden J: The developmental psychopathology of worry. *Clin Child Fam Psychol Rev* 2011; 14:174–197
 36. Chouinard MM: Children's questions: a mechanism for cognitive development. *Monogr Soc Res Child Dev* 2007; 72:1–112

37. Costello EJ, Mustillo S, Erkanli A, Keeler G, Angold A: Prevalence and development of psychiatric disorders in childhood and adolescence. *Arch Gen Psychiatry* 2003; 60:837–844
38. Pine DS, Cohen P, Gurley D, Brook J, Ma Y: The risk for early-adulthood anxiety and depressive disorders in adolescents with anxiety and depressive disorders. *Arch Gen Psychiatry* 1998; 55: 56–64
39. Klein DN, Riso LP: Psychiatric disorders: Problems of boundaries and comorbidity, in *Basic issues in Psychopathology*. Edited by Costello CG. New York, Guilford Press, 1993, pp 19–66
40. Masten AS, Tellegen A: Resilience in developmental psychopathology: contributions of the Project Competence Longitudinal Study. *Dev Psychopathol* 2012; 24:345–361