

Informant Disagreement for Separation Anxiety Disorder

DEBRA FOLEY, PH.D., MICHAEL RUTTER, M.D., ANDREW PICKLES, PH.D., ADRIAN ANGOLD, M.D.,
HERMINE MAES, PH.D., JUDY SILBERG, PH.D., AND LINDON EAVES, PH.D.

ABSTRACT

Objective: To characterize informant disagreement for separation anxiety disorder (SAD). **Method:** The sample comprised 2,779 8- to 17-year-old twins from a community-based registry. Children and their parents completed a personal interview about the child's psychiatric history. Parents completed a personal interview about their own psychiatric history and a questionnaire about their marital relationship. **Results:** Informant agreement for SAD ranged between chance and extremely poor. Most cases of SAD were diagnosed by interview with only one informant. SAD diagnosed only by child interview was associated with an increased odds of father-rated oppositional defiant disorder, and vice versa. SAD diagnosed only by parent interview was predicted by the parental informant's history of antisocial personality disorder. SAD diagnosed only by paternal interview was also predicted by mother-rated marital conflict and dissatisfaction. **Conclusions:** Parents and children rarely agree about the presence of any level of child separation anxiety. A symptom "or-rule" mostly indexes diagnoses based on interview with only one informant, but the relative validity of such diagnoses remains unclear. *J. Am. Acad. Child Adolesc. Psychiatry*, 2004;43(4):452–460. **Key Words:** child report, parent report, informants, separation anxiety disorder.

Separation anxiety disorder (SAD) is defined by developmentally inappropriate, excessive, persistent, and unrealistic worry about separation from attachment figures, most commonly parents or other family members. The 12-month prevalence of SAD is generally estimated at around 5%, but there is significant inter-study variation (2–13%) (Costello and Angold, 1995). This reflects variation in ascertainment and (especially)

age of the target sample, assessment methods and instrumentation, and the composition and handling of multiple informant data. Many studies report a declining prevalence of SAD as children age into adolescence, and some report a significantly higher prevalence in girls than boys (Costello et al., in press).

Self-report interviews with juvenile subjects yield a higher prevalence of SAD than interviews with adult informants, and agreement between informants ranges between low and moderate (Grills and Ollendick, 2003; Klein, 1991). The reasons for informant disagreement are not well understood. Cantwell et al. (1997) found that parent–child agreement was not influenced by gender, age, parental education, disorder onset age, or severity of disorder in a community sample of adolescents. Grills and Ollendick (2003), in contrast, reported higher parent–child agreement in association with increasing age, male gender, and lower levels of family conflict in a clinical sample of children.

Many community surveys attempt to mimic clinical decision making by combining diagnostic information from multiple informants using an "or-rule" (Bird et al., 1992). An or-rule is based on the assumption that each informant is approximately equally valid, and it gives equal credence to assignments based only on child

Accepted September 23, 2003.

From the Human Genetics Department, Virginia Commonwealth University (Drs. Foley, Maes, Silberg, Prof. Eaves); School of Epidemiology and Health Science and Center for Census and Survey Research, University of Manchester, United Kingdom (Prof. Pickles); Psychiatry Department, Duke Medical Center, Duke University (Dr. Angold); and Social, Genetic and Developmental Psychiatry Research Center, Institute of Psychiatry, London (Prof. Sir Rutter).

This work was supported by NIMH grants MH-60324, MH-45268, MH-57761, and MH-65322. The authors acknowledge the contribution of the Virginia Twin Study for Adolescent Behavioral Development, now part of the Mid-Atlantic Twin Registry (MATR), to ascertainment of subjects for this study. The MATR, directed by Drs. Corey and Eaves, has received support from the NIH, the Carman Trust for Scientific Research, and the WM Keck, John Templeton, and Robert Wood Johnson Foundations.

Reprint requests to Dr. Foley, Virginia Commonwealth University, PO Box 980003, Richmond, VA 23298-0003; e-mail: dfoley@hsc.vcu.edu.

0890-8567/04/4304-0452©2004 by the American Academy of Child and Adolescent Psychiatry.

DOI: 10.1097/01.CHI.0000112482.08386.d7

or parent interviews. It is the goal of this study to investigate correlates of informant disagreement for SAD and the utility of using an or-rule when surveying SAD in a community setting.

We aimed to use data collected by personal interview with children, mothers, and fathers enrolled in a community-based study to characterize: (1) the 3-month prevalence of SAD estimated by interview with each informant, and by the application of a symptom- and diagnosis-based or-rule, (2) agreement between informants, and (3) correlates of informant disagreement.

METHOD

Subjects were participants in the Virginia Twin Study for Adolescent Behavioral Development (VTSABD). The VTSABD is a longitudinal community-based study of 1,412 Caucasian families with 8- to 17-year-old juvenile twins (Eaves et al., 1997; Hewitt et al., 1997). Twins were eligible for the current study if the twin, mother, or father was interviewed about the twin's history of SAD at entry to the study. The eligible sample comprised 2,779 individual twins (1,280 boys and 1,499 girls).

Families were interviewed at home by trained field workers. Twin subjects were personally interviewed about their psychiatric history during the past 3 months using the children's version of the Child and Adolescent Psychiatric Assessment (CAPA-C) (Angold and Costello, 2000; Angold et al., 1995). Twins were randomly assigned to different interviewers, and immediately following the interviews with the twins, each parent was subsequently interviewed about each twin's psychiatric history during the past 3 months using the parent version of the Child and Adolescent Psychiatric Assessment (CAPA-P). Each parent was interviewed by a different field worker, and the twin about which the parent was first interviewed was randomly assigned. Attention-deficit/hyperactivity disorder (ADHD), surveyed only by the CAPA-P, conduct disorder (CD), depression (minor or major), overanxious disorder (OAD), oppositional defiant disorder (ODD), SAD, and phobias were assessed following the *DSM-III-R*. The short-term test-retest reliability of CAPA symptom ratings has been reported elsewhere (Angold and Costello, 1995).

The protocol for the VTSABD was implemented prior to the release of the *DSM-IV*, and it is therefore important to note changes in the criteria used to define SAD between *DSM-III-R* and *DSM-IV*. The symptomatic and duration threshold for SAD is defined by the presence of three of eight symptoms for at least 4 weeks in the *DSM-IV* and three of nine symptoms for at least 2 weeks in the *DSM-III-R*. Recurrent excessive distress about anticipated or actual separation was collapsed into one symptom in *DSM-IV*, but in all other respects the symptom criteria are unchanged. The *DSM-IV* also requires clinically significant distress or impairment, and the CAPA assesses 15 areas of disability associated with specific symptom clusters (Angold et al., 1995; Pickles et al., 2001). Each area of disability is rated on a 3-point scale (for no, partial, or severe impairment), and ratings are summed to estimate overall level of disability. A score of 1 or higher was used here to define the presence of at least minimal disability in association with SAD.

After completing the CAPA-P, each parent was personally interviewed about his or her own lifetime history of *DSM-III-R* alco-

holism, antisocial personality disorder (ASPD), generalized anxiety disorder, major depressive disorder, panic disorder, social phobia, and simple phobia. The parental interview is a modified version of the Structured Clinical Interview for *DSM-III-R* (SCID) and the Diagnostic Interview Schedule (DIS) and is described in detail elsewhere (Foley et al., 2001). Parents completed a questionnaire that included the Dyadic Adjustment Scale (DAS) (Spanier, 1976) immediately following the child and parent interviews. Dyadic satisfaction during the previous year was surveyed and scored as outlined by Spanier (1976), with higher scores reflecting a relatively higher level of satisfaction. The level of dyadic satisfaction rated by mothers (mean = 33.79, SD 3.95, range 3–42, $n = 1,165$) was slightly lower than that rated by fathers (mean = 34.19, SD 3.52, range 17–45, $n = 965$) (Wilcoxon two-sided test, $p = .06$).

Pubertal status was assessed by four CAPA-C items for boys (surveying body hair, skin changes, voice breaking, facial hair) and girls (surveying body hair, skin changes, breast development, menstruation). Items ratings (0 = no; 1 = yes, barely; 2 = yes, definitely; and 3 = development complete) were summed to estimate pubertal development. The mean puberty score was 2.92 (SD 2.89, range 0–11) in boys and 3.78 (SD 3.13, range 0–10) in girls. The Pearson correlation coefficient between age and puberty score was $r = 0.82$ ($p = .0001$) for boys and $r = 0.85$ ($p = .0001$) for girls.

Statistical Analysis

Variation in the prevalence of SAD by sex and informant was evaluated using a two-tailed χ^2 test. The Fisher exact test was used when the expected N in any cell of the contingency table was less than 5. Age trends were evaluated by regressing age and pubertal status on SAD. Age and pubertal status are highly correlated, so a sequential logistic regression model was used to estimate the significance of the association between puberty and SAD after removing the variance attributable to age. This analysis therefore tested whether pubertal developmental that is atypical for (or independent of) chronological age is associated with SAD. The bivariate odds of SAD in association with other diagnoses or parental characteristics was estimated using logistic regression. Informant effects were evaluated following the method described by Fitzmaurice et al. (1995). This method tests the statistical significance of informant effects by specifying a regression equation that includes a predictor variable, a categorical informant variable, and an interaction between the informant and predictor variables. Regression analyses were performed within PROC GENMOD in SAS version 6.12 to adjust for the correlation between co-twins.

RESULTS

Child interviews identified more cases of SAD than parent interviews (Table 1). Between 30% and 50% of cases had some degree of associated impairment. The female-to-male ratio of cases was higher based on parent (especially paternal) interview. The prevalence of SAD declined in association with increasing age, but age trends were statistically significant only for cases diagnosed by the or-rule or child interview. Pubertal status was associated with SAD in girls after partitioning out the risk attributable to age, but the direction of effects varied by informant. A higher level of sexual

TABLE 1
Three-Month Prevalence of Separation Anxiety Disorder

Diagnosis	Source	Total			Boys			Girls			Boy-Girl Ratio
		Prevalence (%)	Age (OR)	Puberty (OR)	Prevalence (%)	Age (OR)	Puberty (OR)	Prevalence (%)	Age (OR)	Puberty (OR)	
SAD	Symptom or-rule	7.95	0.82*	1.02	5.63	0.92	0.85	9.94	0.84*	1.02	1.76
	Diagnostic or-rule	7.34	0.81*	1.03	5.00	0.89	0.84	9.34	0.84*	1.02	1.87
	Child	5.91	0.78*	1.07	4.43	0.95	0.83	7.15	0.73*	1.14*	1.61*
	Mother	1.98 ^a	0.94	0.85	1.13 ^a	0.79	0.85	2.70 ^a	1.14	0.74*	2.39*
	Father	0.87 ^c	0.89	1.00	0.33 ^b	0.53	0.75	1.34 ^c	1.14	0.85	4.06*
SAD with impairment	Symptom or-rule	3.39	0.73*	1.12	1.8	1.04	0.79	4.75	0.70*	1.15	2.64
	Diagnostic or-rule	3.10	0.75*	1.10	1.72	1.04	0.78	4.27	0.71*	1.13	2.48
	Child	2.46	0.71*	1.17*	1.39	1.10	0.79	3.36	0.64*	1.25*	2.42*
	Mother	0.97 ^a	0.88	0.89	0.44	0.84	0.79	1.43	1.02	0.80	3.25*
	Father	0.26 ^c	0.89	0.73	0.22	0.71	0.71	0.29	1.15	0.64	1.32

Note: OR = odds ratio; SAD = separation anxiety disorder.

^aPrevalence significantly higher based on child report than maternal report; ^bchild report than paternal report; or ^cchild report than maternal report and maternal report than paternal report.

**p* ≤ .05.

maturation was positively associated with SAD diagnosed by child interview but negatively associated with SAD diagnosed by maternal interview.

The prevalence of SAD based on a symptom versus diagnostic or-rule was almost identical (Table 1). A symptom or-rule therefore mostly identified cases based only on child interview or only on parent interview. Except for mothers and children, for whom agreement about the presence of SAD was extremely poor, agreement between informants was not significantly better than chance (Table 2). The presence of impairment did not improve agreement.

Informant disagreement was investigated using subjects for whom three informants completed the CAPA (*n* = 1,653) but excluding subjects for whom any two

informants agreed about the presence of SAD (*n* = 8). This subsample (*n* = 1,645, 59.2% of the total) was used to characterize SAD diagnosed (1) only by children, but not parents (*n* = 72), (2) only by mothers, but not children or fathers (*n* = 21), and (3) only by fathers, but not children or mothers (*n* = 9). Unless otherwise indicated, the reference group in the following analyses was children without a diagnosis of SAD.

Most children diagnosed with SAD by only one informant were rated as having no symptoms of SAD by the other informants (Table 3). SAD diagnosed only by maternal interview was more likely to be associated with a subthreshold level of SAD symptoms rated by another informant (usually children) than SAD diagnosed only by child or paternal interview.

TABLE 2
Informant Agreement for Separation Anxiety Disorder

Diagnosis	Child and Mother		Child and Father		Mother and Father	
	κ	95% CI	κ	95% CI	κ	95% CI
SAD						
Total	0.07	0.006, 0.13	0.02	-0.03, 0.07	0.04	-0.05, 0.13
Boys	0.10	-0.02, 0.22	-0.004	-0.01, 0.001	-0.002	-0.005, 0.001
Girls	0.05	-0.02, 0.12	0.03	-0.04, 0.11	0.04	-0.06, 0.14
SAD with impairment						
Total	0.10	-0.003, 0.19	-0.004	-0.007, -0.0005	0.11	-0.09, 0.31
Boys	0.10	-0.09, 0.29	-0.002	-0.006, 0.001	0.00	0.00, 0.00
Girls	0.09	-0.02, 0.20	-0.005	-0.01, 0.00	0.12	-0.10, 0.34

Note: CI = confidence interval; SAD = separation anxiety disorder.

TABLE 3

Subthreshold Symptoms Rated by Other Informants When Separation Anxiety Disorder Is Diagnosed Only by Child Interview or Only by Parent Interview

Informant for SAD Diagnosis	<i>n</i>	Informant Who Did Not Confirm Diagnosis	% Children With Subthreshold Symptoms Rated by Other Informant		
			0 Symptoms	1 Symptoms	2 Symptoms
Child	72	Mother	91.67	4.17	4.17
		Father	94.44	4.17	1.39
Mother	21	Child	71.43	19.05	9.52
		Father	80.95	4.76	14.29
Father	9	Child	77.78	11.11	11.11
		Mother	88.89	11.11	0.00

Note: SAD = separation anxiety disorder.

SAD diagnosed only by child interview was significantly associated with mother-rated simple phobia (odds ratio [OR] = 1.84, $p = .05$) and child-rated simple phobia (OR = 5.70, $p = .0001$). This reflected confirmation by children of a phobia rated by mothers in 11 of 13 cases, but confirmation by mothers of a phobia rated by children in only 11 of 36 cases ($\kappa = 0.20$, confidence interval [CI] = 0.03, 0.37). SAD diagnosed only by child interview was also significantly associated with father-rated ODD (OR = 4.03, $p = .07$) but not child-rated ODD (OR = 0). Five father-rated ODD symptoms were more prevalent in association with SAD diagnosed only by child interview: 1, often argues with adults (13.56% versus 5.12%; $p = .01$); 4, often deliberately annoys people (10.17% versus 3.91%; $p = .03$); 5, often blames others for his or her mistakes or misbehavior (24.56% versus 6.66%; $p = .0001$); 7, often angry and resentful (10.53% versus 2.79%; $p = .007$); and 8, often spiteful and vindictive (8.47% versus 2.34%; $p = .02$). SAD diagnosed only by maternal interview was significantly associated with child-rated depression (OR = 4.14, $p = .06$) and mother-rated depression (OR = 6.66, $p = .004$). This reflected confirmation by children of a depression rated by mothers in 1 of 2 cases, and confirmation by mothers of a depression rated by children in 1 of 3 cases ($\kappa = 0.31$, CI = -0.27, 0.90). SAD diagnosed only by paternal interview was also significantly associated with child-rated depression (OR = 7.02, $p = .07$) and father-rated depression (OR = 11.43, $p = .04$). This reflected confirmation by children of a depression rated by fathers in 0 of 1 cases, and confirmation by fathers of a depression rated by children in 0 of 1 cases ($\kappa = -0.17$,

CI = -0.39, 0.06). SAD diagnosed only by paternal interview was significantly associated with child-rated ODD (OR = 9.91, $p = .03$) but not father-rated ODD (OR = 0.00). These findings suggest that SAD diagnosed only by child interview is sometimes rated as difficult behavior (ODD) by fathers, and vice versa. SAD diagnosed only by child interview was only rarely rated as a phobia by mothers that was not confirmed by children, or as depression by parents without confirmation by children.

Maternal ASPD was significantly associated with SAD diagnosed only by maternal interview (OR = 7.56, $p = .05$) but not SAD diagnosed only by child (OR = 1.94, $p = .52$) or paternal interview (OR = 0.00). Paternal ASPD was significantly associated with SAD diagnosed only by paternal interview (OR = 9.66, $p = .007$) but not SAD diagnosed only by child (OR = 1.25, $p = .71$) or maternal interview (OR = 1.85, $p = .55$). The association between paternal ASPD and SAD differed significantly when the informant for the diagnosis was the father versus the child ($p = .04$), but not the father versus the mother ($p = .20$). There were no other significant informant differences in the association between parental psychiatric disorder and SAD.

Mother-rated marital difficulties were significantly associated with SAD diagnosed only by paternal interview (OR = 1.14, $p = .007$) but not SAD diagnosed only by maternal (OR = 1.06, $p = .27$) or child interview (OR = 0.97, $p = .33$). The association between mother-rated marital difficulties and SAD differed significantly when the informant for the diagnosis was the father versus the child ($p = .006$) but not the mother versus the child ($p = .13$).

SAD diagnosed only by child interview was significantly associated with all other child-rated anxiety disorders (Table 4). SAD diagnosed only by parent interview was significantly associated with all other parent-rated disorders (Table 4). Comorbidity with SAD varied significantly by informant for CD (father > child, $p = .02$) and OAD (mother > child, $p = .05$), and there was a similar trend for depression (mother > child, $p = .07$; father > child, $p = .08$).

DISCUSSION

SAD is a relatively common disorder based on child interview or an or-rule, but SAD is a relatively uncommon disorder based on parent (particularly paternal) interview or in association with any degree of functional impairment. Girls are more likely to be diagnosed with SAD than boys, but this sex difference is more pronounced based on parent (especially paternal) interview. The prevalence of SAD peaks in younger children, but child interviews index more age-related variation than parent interviews. Accurate characterization of the epidemiology of SAD will therefore require an understanding of the reasons for informant disagreement and a method for evaluating the validity of SAD diagnosed only by child or parent interview.

Informant agreement for SAD in the VTSABD ranged between chance and extremely poor, and very few cases were diagnosed only by a symptom-based or-rule. Previous reports of parent-child agreement for SAD have been quite variable. Boyle et al. (1993) reported a κ of 0.01 in 6- to 11-year-olds and 0.68 in 12- to 16-year-olds using the Diagnostic Interview for

Children and Adolescents (DICA) ($n = 251$). Cantwell et al. (1997) reported $\kappa = 0.51$ in 14- to 18-year-olds using the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS) ($n = 281$). Parent-child agreement for SAD in clinical settings is generally higher, but it does not exceed the best levels of agreement reported in community settings. Rapee et al. (1994) reported $\kappa = 0.24$ in 6- to 16-year-olds using the Anxiety Disorders Interview Schedule (ADIS) ($n = 161$), and Grills and Ollendick (2003) reported $\kappa = 0.14$ in girls and 0.44 in boys with a mean age of 10 years using the ADIS ($n = 165$). Chambers et al. (1985) reported an intraclass correlation coefficient (ICC) of 0.70 for SAD symptoms in children aged 6 to 17 years ($n = 52$) using the K-SADS, but they did not report agreement for diagnoses. Expert clinicians administered the interview, interviews with children were guided by information provided by the parent, and parents and children were sometimes reinterviewed together to resolve discrepancies on specific symptom items. Agreement is therefore highest in studies that have used the K-SADS, but these studies also used clinically trained staff to interview both parent and child.

Most children diagnosed with SAD in the VTSABD were rated as having no symptoms of separation anxiety disorder by other informants. The presence of impairment was not associated with better informant agreement. Jensen et al. (1999) also found no association between impairment and informant agreement for any anxiety disorder in the Methods for the Epidemiology of Child and Adolescent Mental Disorders (MECA) study. Poor correspondence between indices of disorder severity and informant agreement has been reported for other dis-

TABLE 4
Bivariate Odds of Comorbidity Associated With Separation Anxiety Disorder: Within-Informant Effects

Comorbid Disorder	Informant for SAD and Comorbid Diagnoses		
	Child	Mother	Father
Agoraphobia	7.10*	13.03	0.00
Attention-deficit/hyperactivity disorder	—	0.00	12.36*
Conduct disorder	0.39	3.32	12.83*
Minor or major depression	1.14	6.66*	11.43*
Oppositional defiant disorder	0.00	9.47*	0.00
Overanxious disorder	4.27*	12.50*	3.59
Simple phobia	5.70*	7.92*	15.71*
Social phobia	4.08*	0.00	0.00

Note: SAD = separation anxiety disorder.

* $p < .05$.

orders (Klein, 1991). Weissman et al. (1987), for example, reported that length of illness and treatment did not affect parent-child agreement for depression.

Given that informant disagreement was not explainable by the number of symptoms rated by different informants, or by disorder severity, we therefore examined whether SAD diagnosed by interview with only one informant was associated with an increased odds of a different diagnosis rated by other informants. In a small and statistically significant number of cases, SAD diagnosed only by child interview was rated as ODD by fathers, and vice versa. Mothers only rarely rated SAD diagnosed only by child interview as phobias, and both parents rarely rated SAD diagnosed only by child interview as depression. Children may, of course, misinterpret their own feelings or behaviors. Alternately, mothers may mistake SAD for a phobia, mothers and fathers may misinterpret anxiety as depression, and fathers may interpret conflict associated with unrecognized SAD as unfounded defiance. There is some tentative support for the latter view. Becker (1960) and Becker et al. (1962) found that women judged hostile by others generally regarded themselves as anxious, and Freud (1965) noted that temper tantrums may occur in anxious or phobic children if their protective mechanisms are interfered with. A paternal directive to separate from parents to achieve a reasonable goal (e.g., attend school, complete homework, or go to bed alone) may be one such environmental cue for oppositional behavior in children with SAD.

SAD diagnosed only by child interview was strongly associated with other child-rated anxiety disorders, but not with other disorders. SAD diagnosed only by parent interview was strongly associated with other parent-rated anxiety disorders, and parent-rated ADHD, depression, CD, and ODD. The handling of multiple informants' ratings of SAD in community surveys will therefore have a substantial impact on the identification and characterization of comorbidity and developmental trajectories associated with SAD. Whatever the accuracy of parental ratings, parental perceptions are likely to be important because they will influence the probability of treatment referral and the ongoing relationship between parent and child. The importance of parental perceptions will be partly revealed by future studies that compare within-time and cross-lagged associations between SAD identified by children's versus parent's interviews and indices of parental treatment of

individual twins and differential parental treatment of co-twins.

Three parental characteristics predicted SAD diagnosed only by parent interview. Maternal ASPD predicted SAD diagnosed only by maternal interview. Paternal ASPD and maternal ratings of marital difficulties predicted SAD diagnosed only by paternal interview. A parent's personal history of ASPD was therefore associated with his or her own perception of the child's separation anxiety, but this did not have a generalized effect on the child's behavior that was seen by the other parent. Maternal dissatisfaction with the marital relationship, in contrast, most strongly predicted SAD diagnosed only by paternal interview. Children may conceivably express separation anxiety only in the presence of a parent with ASPD, or only in the presence of a father when the mother is increasingly dissatisfied with the marital relationship, but to fit our findings children of ASPD parents and children of unhappily married women (but not other children) would also have to deny experiencing SAD when interviewed. Alternately, parents with ASPD, or fathers whose partners are unhappy with their marriage, may be biased raters of SAD. Associations between an informant's psychiatric history and his or her ratings of a relative's psychiatric status have been documented previously, but not in reference to parental ASPD and juvenile SAD. Past research on parental informants has largely focused on the importance of maternal depression as a possible source of biased parental ratings (Richters, 1992). Our findings suggest that parental deviance may be more strongly associated with unconfirmed ratings of juvenile anxiety than more consonant parental phenotypes. There is a small amount of literature supporting an association between parental conflict and informant disagreement for SAD. Grills and Ollendick (2003) reported better parent-child agreement for SAD in families with lower levels of familial conflict, perhaps because of better communication regarding the child's feelings and behavior. Higher levels of parent-rated marital problems also predict increasingly discrepant parental reports of child behavior assessed with the Child Behavior Checklist (CBCL) (Christensen et al. 1992). This finding may indicate that parental conflict is a more broadly based correlate of informant disagreement.

Multiple informants' ratings of twins are often analyzed using a structural equation model to distinguish

rater bias from true liability (Neale and Stevenson, 1989). Genetic and environmental influences on liability are estimated from the agreement (or covariance) between informants' ratings, but these models have limited utility when informant agreement is little better than chance. In the standard rater-bias model, informant disagreement is conceptualized as error (projection bias or residual error variance). In reference to the findings presented here, parental ASPD and marital difficulties would be estimated as indices of projection bias, and paternal identification of SAD diagnosed only by child interview as ODD (and vice versa), maternal identification of SAD diagnosed only by child interview as simple phobia, and maternal and paternal identification of SAD diagnosed only by child interview as depression would be estimated as residual error variance. The standard rater-bias model makes no allowance for correlated residual errors among raters such as would occur if both parents misdiagnose SAD as depression or if (twin) children misinterpret depression as SAD. When informant agreement is low, rater-bias models may therefore be better conceptualized as multivariate models that test for correlations between several phenotypic outcomes and between the residual error variance estimated for each informant.

The heritability of many juvenile psychiatric disorders, including SAD, is substantially higher for diagnoses based on parent versus child interviews (Eaves et al., 1997). The present study may offer some insight into this unexplained pattern of findings for SAD. SAD diagnosed only by parent interview is associated with ODD diagnosed by child interview, parental ASPD, and marital conflict. SAD, however, does not co-occur with ODD when both diagnoses are based on child interview. If we assume that the association between parent-rated SAD and child-rated ODD reflects a common association with parental ASPD/marital conflict, then SAD diagnosed by parent interview may subsequently index some portion of the true risk for (and heritability of) both SAD and ODD. Parent ratings may therefore yield inflated estimates of heritability due to a complex series of correlations between the target subject phenotype (parent-rated SAD), informant characteristics (e.g., parent ASPD, marital conflict), and other heritable subject characteristics (e.g., child-rated ODD).

Perhaps the greatest weakness of many studies investigating informant disagreement (including the present

report) is their orientation toward identifying false positives based on parent ratings. This is because it is often easier to identify likely predictors of parental projection or bias than child-based sources of diagnostic error (most commonly age, cognitive level, faking good). Age has been inconsistently related to informant disagreement for SAD, but at least in some studies greater agreement is associated with increasing subject age (Boyle et al., 1993). We are unaware of any studies that have examined the relationship between cognitive ability and agreement for SAD. Hay et al. (1999), however, found that children's cognitive ability was the only multivariate predictor of father's CBCL ratings after adjustment for quality of the mother-child relationship, the mother's CBCL rating, the father's cognitive ability, current psychological functioning, and view of the marriage. Grills and Ollendick (2003) reported that parent-child agreement for SAD was better for children who scored high on the social desirability dimension of the Revised Children's Manifest Anxiety Scale. Scoring high on a lie scale was interpreted as a characteristic of anxiety, and somewhat indirectly as validation of a diagnosis of SAD. The quality of the parent-child relationship also remains an underexplored source of informant disagreement (e.g., time spent by parents with children, parental acceptance and understanding of their children). Treutler and Epkins (2003) found that parental disagreement for CBCL ratings was predicted by increasing time spent by the mother with the child, and father-child disagreement about CBCL ratings was predicted by poor paternal acceptance of the child. Despite these promising leads, much remains to be learned about the validity of SAD diagnosed only by interview with children or only by interview with parents. These cases represent the vast majority of SAD cases in many community surveys, and their relative validity deserves ongoing investigation.

Limitations

The results presented here should be interpreted in light of the following limitations. The VTSABD is a community-based twin study and separation may be experienced differently by twins and singletons. The results are based on the CAPA and may not generalize to other assessment instruments. If diagnoses based on interview with only one informant ultimately prove to have low validity, then very poor informant agreement

using lay interviews may indicate the need to consider other methods for assessing low-prevalence juvenile psychiatric phenotypes in community settings (e.g., Goodman et al., 2000). The study participants were all Caucasian, and our results may not generalize to other ethnic or racial groups. Some comparisons are based on very small *N* sizes, and the consequent power to detect robust effects is low. We have therefore not examined sex or age differences in an effort to maximize statistical power.

Clinical Implications

Extremely poor parent–child agreement regarding the presence of SAD in this community study suggests that parents and children conceptualize child anxiety very differently. It is also possible that at least one informant is reporting invalid data. Discrepant parent–child reports of SAD in clinical settings should therefore be explored in detail, and the findings of this study identify at least some of the associated issues that need to be clarified. SAD identified only by children is associated only with other child-rated anxiety disorders, and children who admit to separation anxiety may experience a broad range of anxiety symptoms. SAD identified only by parents, in contrast, is associated with other parent-rated anxiety disorders and parent-rated CD, ODD, ADHD, and depression. SAD identified only by parents is also associated with antisocial traits in the parent and marital problems, and both factors may lead to unrealistic parental expectations or perceptions of the child. It will therefore be important to clarify whether any of these parent-rated disorders (such as paternal reports of ODD) reflect a misinterpretation of distress associated with anticipated or actual separation from attachment figures or actual comorbidity associated with SAD.

Conclusions

Parents and children rarely agreed about the presence of any level of separation anxiety in this large community-based study. SAD diagnosed only by interview with children or only by interview with parents was distinguished by the prevalence and pattern of comorbidity, and the parental informant's history of ASPD and marital difficulties. Further work is required to assess the relative validity of diagnoses based only on child interview or only on parent interview because

these represent the majority of SAD cases identified by an or-rule in many community studies.

REFERENCES

- Angold A, Costello EJ (1995), A test–retest reliability study of child-reported psychiatric symptoms and diagnoses using the Child and Adolescent Psychiatric Assessment (CAPA-C). *Psychol Med* 25:755–762
- Angold A, Costello EJ (2000), The Child and Adolescent Psychiatric Assessment (CAPA). *J Am Acad Child Adolesc Psychiatry* 39:39–48
- Angold A, Prendergast M, Cox A, Harrington R, Simonoff E, Rutter M (1995), The Child and Adolescent Psychiatric Assessment (CAPA). *Psychol Med* 25:739–753
- Becker WC (1960), The relationship of factors in parental ratings of self and each other to the behaviour of kindergarten children as rated by mothers, fathers and teachers. *J Consult Psychol* 6:507–527
- Becker WC, Peterson DB, Luria Z, Shoemaker DJ, Helmer LA (1962), Relations of factors derived from parent interview ratings to behaviour problems of five-year-olds. *Child Dev* 33:509–536
- Bird HR, Gould MS, Staghezza B (1992), Aggregating data from multiple informants in child psychiatry epidemiological research. *J Am Acad Child Adolesc Psychiatry* 31:78–85
- Boyle MH, Offord DR, Racine Y et al. (1993), Evaluation of the Diagnostic Interview for Children and Adolescents for use in general population samples. *J Abnorm Child Psychol* 21:663–681
- Cantwell DP, Lewinsohn PM, Rohde P, Seeley JR (1997), Correspondence between adolescent report and parent report of psychiatric diagnostic data. *J Am Acad Child Adolesc Psychiatry* 36:610–619
- Chambers WJ, Puig-Antich J, Hirsch M et al. (1985), The assessment of affective disorders in children and adolescents by semistructured interview. Test–retest reliability of the Schedule for Affective Disorders and Schizophrenia for School-Age Children, Present Episode version. *Arch Gen Psychiatry* 42:696–702
- Christensen A, Margolin G, Sullaway M (1992), Interparental agreement on child behavior problems. *Psychol Assess* 4:419–425
- Costello EJ, Angold A (1995), Epidemiology. In: *Anxiety Disorders in Children and Adolescents*, March JS, ed. New York: Guilford, pp 109–124
- Costello EJ, Egger HI, Angold A (in press), The developmental epidemiology of anxiety disorders. In: *Phobic and Anxiety Disorders in Children and Adolescents*, Ollendick T, March J, eds. New York: Oxford University Press
- Eaves LJ, Silberg JL, Meyer JM et al. (1997), Genetics and developmental psychopathology, 2: the main effects of genes and environment on behavioral problems in the Virginia Twin of Adolescent Behavioral Development. *J Child Psychol Psychiatry* 38:965–980
- Fitzmaurice GM, Laird NM, Zahner GE, Daskalakis C (1995), Bivariate logistic regression analysis of childhood psychopathology ratings using multiple informants. *Am J Epidemiol* 142:1194–1203
- Foley DL, Pickles A, Simonoff E et al. (2001), Parental concordance and comorbidity for psychiatric disorder and associated risks for current psychiatric symptoms and disorders in a community sample of juvenile twins. *J Child Psychol Psychiatry* 42:381–394
- Freud A (1965), *Normality and Pathology in Childhood*. New York: International Universities Press, pp 111–112
- Goodman R, Ford T, Richards H, Gatward R, Meltzer H (2000), The Development and Well-Being Assessment: description and initial validation of an integrated assessment of child and adolescent psychopathology. *J Child Psychol Psychiatry* 41:645–655
- Grills AE, Ollendick TH (2003), Multiple informant agreement and the Anxiety Disorders Interview Schedule for parents and children. *J Am Acad Child Adolesc Psychiatry* 42:30–40
- Hay DF, Pawlby S, Sharp D et al. (1999), Parents' judgments about young children's problems: why mothers and fathers might disagree yet still predict later outcomes. *J Child Psychol Psychiatry* 40:1249–1258
- Hewitt JK, Eaves LJ, Silberg JL et al. (1997), Genetics and developmental psychopathology, 1: phenotypic assessment in the Virginia Twin of Adolescent Behavioral Development. *J Child Psychol Psychiatry* 38:943–963
- Jensen PS, Rubio-Stipec M, Canino G et al. (1999), Parent and child

- contributions to diagnosis of mental disorder: are both informants always necessary? *J Am Acad Child Adolesc Psychiatry* 38:1569–1579
- Klein RG (1991), Parent–child agreement in clinical assessment of anxiety and other psychopathology: a review. *J Anxiety Disord* 5:187–198
- Neale MC, Stevenson J (1989), Rater bias in the EASI temperament scale: a twin study. *J Pers Soc Psychol* 56:446–455
- Pickles A, Rowe R, Simonoff E, Foley D, Rutter M, Silberg J (2001), Child psychiatric symptoms and psychosocial impairment: relationship and prognostic significance. *Br J Psychiatry* 179:230–235
- Rapee RM, Barrett PM, Dadds MR, Evans L (1994), Reliability of the *DSM-III-R* childhood anxiety disorders using structured interview: interrater and parent–child agreement. *J Am Acad Child Adolesc Psychiatry* 33:984–992
- Richters JE (1992), Depressed mothers as informants about their children: a critical review of the evidence for distortion. *Psychol Bull* 112:485–499
- Spanier GB (1976), Measuring dyadic adjustment: new scales for assessing the quality of marriage and similar dyads. *J Marriage Fam* 38:15–28
- Treutler CM, Epkins CC (2003), Are discrepancies among child, mother and father reports on children's behavior related to parents' psychological symptoms and aspects of parent–child relationships? *J Abnorm Child Psychol* 31:13–27
- Weissman MM, Wickramaratne P, Warner V et al. (1987), Assessing psychiatric disorders in children. Discrepancies between mothers' and children's reports. *Arch Gen Psychiatry* 44:747–753