

# Prevalence and Description of Selective Mutism in a School-Based Sample

R. LINDSEY BERGMAN, PH.D., JOHN PIACENTINI, PH.D., AND JAMES T. MCCrackEN, M.D.

## ABSTRACT

**Objective:** To examine the prevalence of selective mutism (SM) in a public school sample and compare the functioning and symptoms of children with SM to age- and gender-matched unaffected children. **Method:** Kindergarten, first, and second grade teachers in a large district were asked to identify pupils who met *DSM-IV* criteria for SM and to complete ratings of speaking behavior, social anxiety, other internalizing and externalizing symptoms, and overall functioning for these and comparison youngsters. Teachers completed the same ratings on the SM children 6 months later. **Results:** A participation rate of 94% (125 of 133 teachers) was obtained, and the prevalence of SM was .71% (16/2,256). Measures were completed for 12 (75%) of 16 identified children. Compared with peers, children with SM were more symptomatic on measures of frequency of speech, social anxiety, and other internalizing symptoms. As a group, children with SM had improved 6 months later but remained impaired and symptomatic when compared with the comparison group. **Conclusions:** SM may not be as rare as previously thought. The functioning of children with SM is impaired, and although there is some improvement over time, notable impairment remains, suggesting that intervention is preferable to waiting for SM to remit spontaneously. *J. Am. Acad. Child Adolesc. Psychiatry*, 2002, 41(8):938–946. **Key Words:** selective mutism, child anxiety, social anxiety.

Selective mutism (SM) is defined in *DSM-IV* as the persistent failure to speak in specific social situations despite speaking in other situations. In addition, the disturbance must interfere with achievement or social communication and last for more than 1 month (American Psychiatric Association [APA], 1994). Characteristics of selective mutism were recognized as long ago as 1877 (Wright et al., 1985), but the disorder (earlier called elective mutism) did not appear in the *DSM* until 1980 (APA, 1980). Although there has been increased interest in SM recently, relatively little is known about the prevalence or phenomenology of the disorder.

## Prevalence of Selective Mutism

Although SM has generally been believed to be rare, these estimates are based on scant evidence. Prior to 1997,

*Accepted February 27, 2002.*

*From the Department of Psychiatry and Biobehavioral Sciences, University of California, Los Angeles.*

*This study was supported by NIMH grant MH60098 awarded to Lindsey Bergman. The authors are grateful to the teachers and administration at the Santa Monica Malibu Unified School District for their participation. Special thanks to Lisa O'Malley for her contribution to this study.*

*Reprint requests to Dr. Bergman, 300 UCLA Medical Plaza, Room 1235, Los Angeles, CA 90095; e-mail: lbergman@ucla.edu.*

0890-8567/02/4108-0938©2002 by the American Academy of Child and Adolescent Psychiatry.

only two community-based prevalence studies had been published, neither of which were conducted in the United States. Moreover, these studies surveyed different types of samples and yielded unclear findings. In the United Kingdom, Brown and Lloyd (1975) surveyed primary school teachers 8 weeks after school began and identified 42 (0.69%) of 6,072 4- to 5-year-old children reported as completely mute in school. However, at 8 month follow-up, only 5 (0.08%) were still not speaking. Unfortunately, the utility of this estimate is unclear because the criterion used (completely mute at school) does not correspond to any past or present standard diagnostic criteria for SM. Fundudis et al. (1979) studied a population sample of 3,300 children, also in the United Kingdom, and labeled 102 (0.3%) as speech retarded (failing to use three words strung together as a meaningful communication) at 36 months. Of these 102 youngsters, only 2 (.06%) met a vague criterion for SM (“inordinate and selective shyness of strangers”) when retested at age 7. However, given the lack of evidence for a relationship between early speech retardation and SM, the relevance of Fundudis and colleagues’ (1979) findings to current conceptualizations of SM is also unclear.

More recent Scandinavian investigations have focused on the school environment to investigate the prevalence

of SM. Given that school is the most common site of children's failure to speak (Black and Uhde, 1995; Dummit et al., 1997), it is logical to expect that teachers may have the most accurate information about children's SM symptoms. Kopp and Gillberg (1997) asked Swedish primary school teachers to identify students who failed to speak in the classroom, and only five (0.18%) of 2,793 7- to 15-year-olds met this criteria. These five children were discussed with the headmaster of the school, and two received a standard psychiatric examination. On the basis of this evidence, all five children were believed by the authors to meet *DSM-IV* (APA, 1994) criteria for SM. Using a similar design, Kumpulainen et al. (1998) sent a description of *DSM-III-R* (APA, 1987) SM criteria to all second grade teachers in Kuipo County, Finland. This procedure, plus school nurse confirmation of positive identifications, identified 38 children (out of 2,009 total) with SM, for a prevalence rate of 1.9%.

#### Impairment

In spite of the recognition of SM as a distinct clinical entity, few studies have examined the functional impact of the disorder. Nevertheless, SM is considered to be an impairing condition that interferes with both educational achievement and socialization (Tancer and Klein, 1991). Steinhausen and Juzi (1996) analyzed characteristics of 100 Swiss children with SM and reported that these youngsters scored significantly higher (when compared with population norms) on scales measuring withdrawn behavior, anxious/depressed behavior, and social problems. Similar investigations have also reported at least moderate interference in multiple areas (Dummit et al., 1997) and parent and teacher ratings of high levels of problem behaviors (Black and Uhde, 1995; Dummit et al., 1997). One recent investigation (Kristensen, 2001) reported a significant difference between children with SM and controls on several Child Behavior Checklist subscales (e.g., Total Problems, Internalizing, Externalizing, Withdrawn, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Aggressive Behavior, Competence). However, this study only reported raw scores, which although useful for comparisons with control children, are of limited use in determining clinical impairment or significance. Moreover, the children in this study were seeking treatment and thus may not have been a representative sample of children with SM. Although these studies provide valuable information about the functioning of children with SM, methodological issues limit

their value in advancing our understanding of shared and unique features of SM as compared with other disorders.

#### Relationship to Social Phobia

The understanding of SM has undergone a considerable shift over the last several years. Previously, it was often suggested that SM was related to a variety of conditions including oppositionality, trauma, family neuroses, and speech and language disorders (Anstendig, 1999; Hayden, 1980; Leonard, 2000). However, current conceptualizations focus on selective mutism as closely related to, or even a developmental expression of, social phobia (SP) (e.g., Black and Uhde, 1995; Dummit et al., 1997). In fact, a recent National Institute of Mental Health-sponsored conference on anxiety disorders in youth (Anxiety Disorders Association of America, 1999) recommended consideration of reclassifying SM as a subtype of social phobia. Further support for this relationship is derived from recent studies, which found that at least 97% of children with SM also met *DSM-III-R* criteria for social phobia or avoidant disorder (Black and Uhde, 1995; Dummit et al., 1997). Additional evidence comes from the finding that pharmacologic agents used to treat adult SP are similarly effective in the treatment for SM (Black and Uhde, 1994). Also, similar to children with SP, and unlike most other emotional disorders, SM is usually reported as somewhat more common among girls (Beidel, 1991; Tancer, 1992). Lastly, family history data reveal that 70% of parents of children with SM had a history of SP or avoidant disorder (Black and Uhde, 1995), a rate that is clearly elevated over that in the general population.

In spite of the similarities between SM and SP, there is a marked desynchrony between the apparent ages of onset for the two disorders. Specifically, the typical age of onset for SP is after 10 years of age (Vasey, 1995), whereas onset of SM is usually before age 5 (APA, 1994; Steinhausen and Juzi, 1996). This raises the possibility that SM is a developmental subtype of SP with earlier onset than other symptoms of the disorder. If so, identifying children with SM could provide information regarding the development and course of SP and present an opportunity for early intervention with these socially anxious youngsters. Anecdotal retrospective information from adults who were affected by SM as children suggests that individuals with SM may continue to suffer from social anxiety after SM resolves (Black and Uhde, 1995; Ford et al., 1998).

Researchers (Black and Uhde, 1995; Dummit et al., 1997; Ford et al., 1998) have also noted the resemblance between children with SM and children described as "behaviorally inhibited" in the Harvard Infant study (Kagan et al., 1988). In fact, reluctance to speak is considered to be one of the most sensitive indices of behavioral inhibition (Kagan et al., 1987). Ford et al. (1998) reported that most parents of children with SM rated their children as not responding well to new situations or transitions; both behaviors are considered to be elements of behavioral inhibition (Kagan et al., 1984). Since there is evidence that the presence of behaviorally inhibited temperament is associated with increased risk for anxiety disorders (Biederman et al., 1993), it is possible that SM and social phobia both represent stages in a developmental progression of behavioral inhibition.

Largely as a result of the Brown and Lloyd (1975) study, a distinction has been made between transient and persistent SM (e.g., Carlson et al., 1994; Wilkins, 1985). Although it seems intuitively useful to discriminate between transient and persistent SM, this distinction has not been empirically validated. While persistent mutism may be related to more severe impairment, even a relatively short period of SM may negatively impact functioning. In fact, if SM represents an early manifestation of social anxiety or an index of behavioral inhibition, then a relatively brief period of mutism could be the initial presentation of a more enduring problem rather than an isolated short-term disorder. If this were the case, symptoms of anxiety would persist after the normalization of verbal communication. Although there is some retrospective self-report data to support the notion that individuals with a history of SM continue to experience significant social anxiety (Ford et al., 1998), there is little prospective information available to clarify issues related to the course of SM.

The goals of the present study were to (1) estimate the prevalence of *DSM-IV* SM in a school-based community sample, (2) examine characteristics of children identified with SM as compared with age- and gender-matched peers, and (3) prospectively examine the intermediate-term course of SM.

## METHOD

### Participants

All kindergarten, first, and second grade teachers ( $N = 133$ ) from the 10 elementary schools constituting a public school district in Los Angeles were invited to participate in the survey. Kindergarten, first, and second grades were chosen for study because these grades cover

the time span in which SM is usually recognized (APA, 1994; Steinhausen and Juzi, 1996).

### Study Procedures

Study procedures were approved by the university institutional review board and the participating school district. Teachers were surveyed early in the school year (October/November) in an attempt to obtain information on children whose symptoms only occurred during this period (transient SM). Teachers were asked to provide the total number of fluently English-speaking pupils in their classroom and to indicate whether any child met all of the following criteria (based on the *DSM-IV* diagnostic criteria for SM): (A) Consistent failure to speak in certain situations at school despite speaking in other situations (like at home or with friends), (B) failure to speak interferes with educational achievement or socialization, and (C) failure to speak appears to be unrelated to lack of knowledge of the language or language dysfunction (communication disorder). After teacher surveys were completed, the first or second author met with teachers to discuss each child who met criterion A.

To establish a comparison group, teachers were asked to choose a child of the same gender nearest the study child on the class roster who was English speaking and had not been identified as having a problem with failure to speak or a language disorder. Teachers were then asked to complete questionnaires on any child identified as having SM and on the selected comparison child. Teachers completed the same questionnaires on children with SM approximately 6 months later (time 2 follow-up). Due to teacher time constraints, it was not possible to gather time 2 data on comparison children.

Prior to the teacher survey, parents of K-2 students were informed that their child's teacher might be reporting (without names) information regarding their child's speaking behaviors and functioning in school and that parents could decline participation. Due to concerns with protecting confidentiality and the anonymity of children, there was no opportunity for authors to confirm SM diagnostic status by means of direct clinical evaluation. It should be noted that no parents declined participation in the study.

### Measures

*Teacher's Report Form.* The Teacher's Report Form (TRF) (Achenbach, 1991) is a 118-item scale completed by teachers that assesses internalizing and externalizing behavioral problems and social and academic competence. The TRF has been extensively tested and possesses excellent psychometrics and normative data for children in the study age range. Total score, broad-band scales, selected narrow-band scales (Anxious/Depressed, Withdrawn, Social Problems, Thought Problems, Attention Problems) and school competence were examined.

*School Speech Questionnaire.* The School Speech Questionnaire (SSQ) is a modified version of the Selective Mutism Questionnaire (SMQ) (Bergman et al., 2001) that was used to collect information from teachers regarding students' speaking behaviors at school. The SMQ is a parent self-report measure of SM behaviors and associated impairment and, to our knowledge, is the only measure of its kind. Analyses of data from 576 parents revealed a meaningful factor structure (one of which was related to school), acceptable internal consistency (Cronbach  $\alpha$  coefficient = .74), and expected relationships between subscales and interference ratings (Bergman et al., 2001).

Eleven SMQ items that assess speaking behaviors in school were adapted for use in this study and are referred to as the SSQ. Although no previous psychometric data on the SSQ are available, there are no comparable extant measures with established psychometric properties. Cronbach  $\alpha$  for the 11-item SSQ in the present sample was .94. For

analyses that included total SSQ scores of comparison children, two items pertaining to children's nonverbal communication were dropped because they were not applicable to the comparison children and their item-total correlations were relatively low ( $<.4$ ) in this sample. After these two items were excluded, Cronbach  $\alpha$  was .96. Additional items measuring specific functioning across several domains, as well as the contribution of speaking behavior to the level of functioning, are also assessed in the SSQ. SSQ items contained a statement and four possible responses (0 = never, 1 = sometimes, 2 = often, 3 = always). Lower scores on the SSQ reflect lower frequency of speaking behavior. Both the SSQ and SMQ are available from the first author.

*Children's Global Assessment Scale for Children-Non-Clinician Version.* The Children's Global Assessment Scale for Children-Non-Clinician Version (CGAS-NC) (Shaffer et al., 1983) is a widely used measure of overall severity of disturbance in children. It is a unidimensional measure of social and psychiatric functioning for children aged 4 to 16. The clinician version of the CGAS was used in at least one previous investigation of SM (Dummit et al., 1997).

*Modified Social Anxiety Scale for Children-Revised.* As there are no existing teacher-rated social anxiety measures, the parent version of the Social Anxiety Scales for Children-Revised (SASC-R) (La Greca and Stone, 1993) was modified for use in the present study after consultation with the developer (La Greca, personal communication, 1998). The SASC-R is an 18-item self-report measure for social anxiety that has demonstrated reliability and validity (La Greca and Stone, 1993). To isolate social anxiety symptoms from SM symptoms, five SASC-R items related to speaking were excluded from analyses. A similar strategy was used by Dummit et al. (1997). The internal consistency of the present adaptation of the SASC-R was excellent ( $\alpha = .91$ ).

## RESULTS

### TIME 1: INITIAL ASSESSMENT

#### Prevalence

A total of 125 (of 133 total; 94%) kindergarten, first, and second grade teachers participated in the survey study. Eight teachers (6%) chose not to participate due to time concerns. In cases where classrooms contained more than one teacher, the first teacher listed on school district records was surveyed. The 125 teachers surveyed considered a total of 2,256 English-speaking students. Of these children, 678 were in kindergarten, 796 were in first grade, and 782 were in second grade. A total of 13 teachers from eight schools reported 16 children who met SM study criteria (*DSM-IV* A, B, and C). All children who were believed to meet criterion A were discussed with the first or second author to help ensure the validity of the teacher identification. This yielded a prevalence rate of .71% (16/2,256). An additional nine children who consistently failed to speak in certain situations (criterion A) were identified. Of these nine children, three appeared to have no impairment in functioning (criterion B) and three were reported to have a communication or language disorder (criterion C); for the remaining

three, language disorder had not been ruled out nor was impairment present. Descriptive information from teachers was available on 12 of the 16 identified children; data on four children with SM were unavailable due to teacher nonparticipation in this phase of the study. Among the group of 12 children with SM, 7 were in kindergarten, 2 were in first grade, and 3 were in second grade. Six of the children were male and six were female.

#### Speaking Behavior

For analyses of speaking behaviors and all other dependent variables, two-tailed independent sample *t* tests were used to compare children with SM to comparison children. Where appropriate, descriptive information related to speaking behavior is also presented.

Teacher SSQ ratings supported the presence of clinically significant SM symptoms among the index group. All children with SM received ratings of "sometimes" or "never" on at least one fundamental SSQ item (e.g., talks to selected peers, answers teacher when called on) and ratings of "always" or "often" on items regarding interference in academic and/or social functioning. In contrast, no comparison child received SSQ ratings indicative of speaking problems. The mean rating for interference with academic functioning for the SM group was 2.17, corresponding to "often" interferes. For interference with social function, the mean rating was 1.83 ("always" to "often" interferes).

Analysis of mean SSQ totals (Table 1) indicated that study children spoke significantly less at school than did comparison children ( $t_{1,22} = 12.819, p < .001$ ). This difference is illustrated in Figure 1. Normative data are not available for the SSQ. However, the mean SSQ item score from this sample (mean = 0.92, SD = 0.43) is equivalent to the mean SSQ item score obtained from a previously obtained age-matched sample of youngsters with SM (mean = 0.71, SD = 0.43,  $t_{1,317} = 1.63, p = .11$ ) (Bergman et al., 2001). On SSQ impairment items, teachers rated SM children as having more difficulties with academic ( $t_{1,22} = 2.538, p = .019$ ) and social functioning ( $t_{1,22} = 8.485, p < .001$ ) than comparison children.

As illustrated in Figure 1, children with SM exhibited some variability in failure to speak in different situations. Teachers rated children with SM as speaking to peers (including most peers, select peers, and peers on playground) significantly more frequently than to teachers and other adults at school. The mean rating for speaking to peers was 1.19 (SD = 0.72), corresponding approximately to "sometimes" speaks, whereas the mean rating for speaking to teachers/

**TABLE 1**  
Means and Standard Deviations for Teacher Ratings of SM Children (Times 1 and 2) and Comparison Children (Time 1)

Measure	SM Children Time 1 ( <i>n</i> = 12)		SM Children Time 2 ( <i>n</i> = 11)		Comparison Children Time 1 ( <i>n</i> = 12)	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
Total SSQ	7.67	(3.77) <sup>a</sup>	10.82	(4.73) <sup>b</sup>	24.25	(2.42) <sup>c</sup>
SASC-R	39.5	(10.18) <sup>a</sup>	34.73	(11.16) <sup>b</sup>	25.92	(6.50) <sup>c</sup>
CGAS-NC	47.92	(8.55) <sup>a</sup>	58.18	(13.28) <sup>b</sup>	77.75	(11.34) <sup>c</sup>
TRF subscales						
Internalizing	67.00	(8.28) <sup>a</sup>	63.82	(11.03) <sup>a</sup>	46.50	(10.60) <sup>b</sup>
Externalizing	49.92	(5.18)	50.55	(4.8)	50.25	(9.16)
Withdrawn	74.42	(10.54) <sup>a</sup>	69.82	(11.21) <sup>b</sup>	51.58	(3.87) <sup>c</sup>
Anxious/Depressed	62.58	(6.97) <sup>a</sup>	59.82	(9.8) <sup>ab</sup>	54.50	(6.57) <sup>b</sup>
Thought Problems	55.17	(8.87)	55.64	(9.06)	53.17	(7.59)
Attention Problems	59.17	(7.70) <sup>a</sup>	56.91	(6.01) <sup>a</sup>	51.75	(4.12) <sup>b</sup>
Social Problems	56.58	(6.23) <sup>ab</sup>	58.82	(5.56) <sup>a</sup>	54.0	(5.54) <sup>b</sup>
Academic Performance	40.42	(6.99) <sup>a</sup>	40.45	(7.95) <sup>a</sup>	49.42	(8.61) <sup>b</sup>
TRF Total Score	60.50	(5.39) <sup>a</sup>	57.18	(7.18) <sup>b</sup>	49.08	(9.37) <sup>c</sup>

Note: Different superscripts represent significant differences between groups ( $p < .05$ ). SM = selective mutism; SSQ = School Speech Questionnaire; SASC-R = Social Anxiety Scales for Children-Revised; CGAS-NC = Children's Global Assessment Scale for Children-Non-Clinician Version; TRF = Teacher's Report Form.

other adults was 0.63 (SD = 0.35), representing a score approximately halfway between "sometimes" and "never" speaks ( $t_{1,11} = 3.32, p = .007$ ).

#### Social Anxiety

As presented in Table 1, total modified SASC-R scores for the SM group were significantly higher than those for comparison youngsters ( $t_{1,22} = 3.89, p = .001$ ).

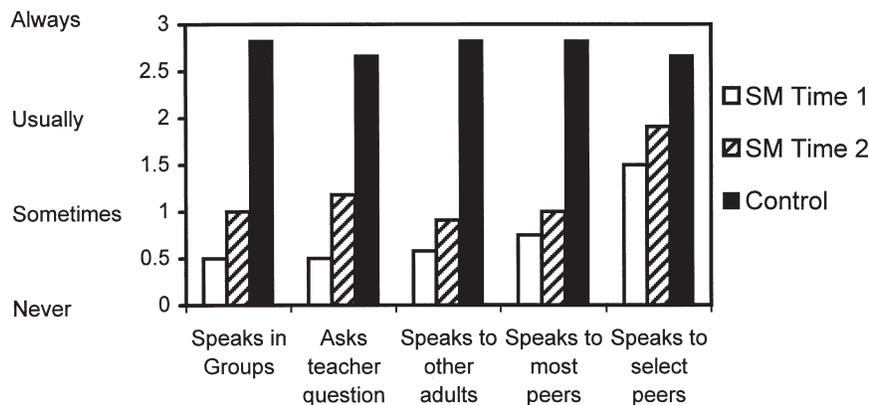
#### Teacher's Report Form

Standardized *T* Scores were used for TRF analyses. There were significant between-group differences on the Internalizing ( $t_{1,22} = 5.23, p < .001$ ), Withdrawn ( $t_{1,22} =$

7.05,  $p < .001$ ), Academic Performance ( $t_{1,22} = 2.81, p = .01$ ), and Attention Problems ( $t_{1,22} = 2.94, p = .008$ ) subscales and on mean total *T* score ( $t_{1,22} = 3.66, p = .001$ ). Mean scores for the SM group were clinically elevated on the Internalizing and Withdrawn subscales and borderline elevated for Academic Performance and total scores. Teachers rated 83% (10 of 12) of the comparison children as performing at or above grade level versus only 42% (5 of 12) of the children with SM.

#### Functional Impairment

As presented in Table 1, youngsters with SM were significantly more impaired than comparison youngsters on



**Fig. 1** Mean teacher ratings of frequency of speech among children with selective mutism (SM) at time 1 ( $n = 12$ ), children with SM at time 2 ( $n = 11$ ), and comparison children ( $n = 12$ ).

the CGAS-NC ( $t_{1,22} = 7.28, p < .001$ ). According to teacher report, seven (58%) of the children with SM were receiving or were referred for special services, whereas none of the comparison children had any contact with special services at school ( $\chi^2 = 12.0, p = .001$ ).

#### TIME 2: FOLLOW-UP ASSESSMENT

Teachers evaluated 11 of the 12 index children a second time approximately 6 months after the initial assessment (March-April). One child left the school for reasons that were unknown but were believed by the teacher to be unrelated to SM. Teachers reported that during the interim period, one child began receiving academic tutoring and one child was referred for counseling, although the parents did not pursue this referral. Paired sample  $t$  tests were conducted to compare teacher ratings of children with SM at time 1 and follow-up. As mentioned previously, time 2 data on comparison children were not obtained. Therefore, ratings of the SM group at time 2 were compared with those of the comparison group at time 1 by means of independent sample  $t$  tests.

Examination of SSQ scores revealed a significant increase in speaking behavior for the SM group at time 2 ( $t_{1,10} = 3.53, p = .005$ ). However, SSQ scores at time 2 remained significantly below those for the comparison group ( $t_{1,21} = 8.69, p < .001$ ). Within the SM group, there were no significant changes over time for Academic or Social Functioning or for SM-related interference in these areas (Table 1). Overall, SASC-R total scores for the SM group decreased significantly from time 1 to time 2, although the mean time 2 SASC-R score for the SM group remained significantly higher than the mean comparison group score from time 1 ( $t_{1,21} = 2.34, p = .029$ ).

The SM group also evidenced significant decreases in the TRF Withdrawn subscale and total scores from time 1 to time 2, although the mean Withdrawn  $T$  score remained in the clinical range and the mean Internalizing score remained in the "borderline clinical range" at follow-up. No other scales were in the clinical range at time 2. On average, teachers rated youngsters with SM as functioning better at time 2 versus time 1 on the CGAS-NC ( $t_{1,10} = 3.92, p = .003$ ). However, similar to the other measures, children with SM continued to receive higher impairment scores at time 2 than did comparison children at time 1 ( $t_{1,21} = 3.81, p = .001$ ).

#### Persistent Versus Transient Selective Mutism

Of the 11 children evaluated at time 2, three (28%) showed notable improvements in SM symptoms as evi-

denced by ratings of "often" or "always" on fundamental SSQ speaking items (e.g., talks to selected peers, answers teacher when called on), and "sometimes" or "never" on items regarding SM-related impairment in functioning. The remaining eight children received SSQ scores indicative of continued problems with speaking.

Small group sizes did not allow for statistical comparisons between the three improved children and the eight with persistent symptoms. However, all of the children who improved were female and in kindergarten. Also, all three of the recovered children had time 1 TRF Internalizing and Withdrawn  $T$  scores that were not clinically elevated. The average initial SASC-R and SSQ scores were 28.0 and 23.3 for the improved children and 46.75 and 29.88, respectively, for the remainder of the SM group.

#### DISCUSSION

To our knowledge, this is the first community-based study designed to estimate the population prevalence of SM using *DSM-IV* criteria in the United States. Our estimated point prevalence figure of 0.71 % is comparable to the results of some, but not all, previous studies. Discrepancies, where they exist, are likely due to the use of different criteria for identifying SM across the various studies. For instance, the use of criteria that are stricter than *DSM* probably resulted in the significantly lower prevalence rate (0.18%) reported by Kopp and Gillberg (1997), whereas the seemingly high 1.9% estimate reported by Kumpulainen et al. (1998) was based on *DSM-III-R* (APA, 1987) criteria that do not include impairment.

Although SM is generally recognized as a rare disorder, there is little evidence to support this. One of the most frequently cited (e.g., Masten et al., 1996; Steinhausen, 1996; Wright et al., 1994) prevalence rates of 0.06% is derived from a seriously flawed investigation (Fundudis et al., 1979). The results of the present study provide evidence that SM may be more common than is frequently recognized. In fact, it is likely that the point prevalence rate for SM is comparable to rates of other psychiatric disorders of childhood, including obsessive-compulsive disorder (0.5–1.0%) (Piacentini and Bergman, 2000) and major depression (0.4–3.0%) (Pataki, 2000). Other major childhood disorders (e.g., autism and Tourette's disorder) appear to occur less frequently than SM (McCracken, 2000; Volkmar and Klin, 2000). Our sample contained an equal number of males and females, which is somewhat discrepant from the ratio typically reported (average female-to-male ratio of 1.2:1) (Tancer, 1992). This could be due to our relatively small

sample size or perhaps related to the young age of our sample; there is evidence to suggest that the gender difference in prevalence may become more pronounced among older children (Steinhausen and Juzi, 1996)

As expected, teacher ratings revealed that children with SM spoke considerably less frequently at school than comparison children, and there were many situations in which these children never spoke. Consistent with past research (e.g., Bergman et al., 2001; Dummitt et al., 1997; Kumpulainen et al., 1998) the present investigation also revealed that children with SM spoke with adults less frequently than with their peers. Also as predicted, children in the SM group appeared to be considerably more socially anxious than their peers, even when anxiety about speaking was not considered.

Similar to previous investigations (Black and Uhde, 1995; Dummit et al., 1997), the children in this study were rated by their teachers as significantly impaired and symptomatic, especially in contrast to age- and gender-matched comparison children without SM. In the present investigation, impairment was not limited to social functioning but also included deficiencies in academic and overall functioning. The presence of academic impairment secondary to lack of verbal interaction is not surprising, given that verbal interaction in group situations is the preferred mode of teaching in early elementary grades (Johnson and Johnson, 1987). In addition, the inability of teachers to evaluate a child's understanding of basic concepts can result in a decreased opportunity for giving fundamental corrective feedback. Our clinical experience and that of others suggests that many professionals working with children with SM do not consider the potential academic consequences that may be experienced by a child who is not disruptive but does not participate in class.

Elevations on TRF Internalizing, Withdrawn, and Anxious/Depressed subscales are consistent with previous investigations (Kristensen, 2001; Steinhausen and Juzi, 1996) and provide support for the hypothesis that SM is either closely related to, or an expression of, SP. The lack of elevation on the Externalizing subscale is also consistent with previous data (Kristensen, 2001; Steinhausen and Juzi, 1996) and with the current conceptualization of SM as being unrelated to oppositional behavior. Our TRF results stand in contrast to one recent investigation (Kristensen, 2001) that reported significantly higher scores among children with SM on TRF Thought Disorder, Social Problems and Attention Problems subscales. However, it is unclear whether the elevations described by Kristensen

(2001) were clinically significant because standardized *T* scores were not reported.

The 6-month follow-up of children who failed to speak during the first few weeks of school revealed that most continued having difficulty speaking at school. Among the follow-up sample, only three (27%) appeared to improve significantly over time. Although the sample size is quite small, it is noteworthy that all three of these children with transient SM were female, in the youngest group, and relatively mildly affected. Although quite speculative, these results suggest that milder SM in younger children may be more likely to remit spontaneously. Among the children with persistent SM, symptoms decreased over the course of the year. Notably, however, on most indices, the SM group remained impaired and symptomatic at follow-up relative to comparison group ratings from time 1. Therefore, it appears that although many youngsters with SM may show some level of improvement over time, most remain significantly impaired in comparison with unaffected peers. In spite of the small number of children studied, the present results provide preliminary support for the distinction between transient and persistent SM. Future study is necessary to better our understanding of this distinction and to identify potential predictors the course of illness.

Two important strengths of the present study are the use of a nonreferred sample of children with SM and the inclusion of an age- and gender-matched comparison group. The former is particularly important in light of evidence that a large percentage of children with SM are not referred for treatment (Black and Uhde, 1995). Since it is likely that only the most severe cases are referred for treatment, the use of a community sample ensures a representative group of affected children.

#### Limitations

Although the present study generated substantial information related to SM, certain limitations must be noted. First, information for each child was obtained from a single informant. Although teachers may be the most valuable source of information relevant to SM, information from parents would have added substantially to this study. Second, the design of this study did not include clinical assessment of the children but instead relied on teacher identification of the children and subsequent interview with the first author to confirm the probable existence of SM. Unfortunately, the SM sample might have been skewed by the lack of descriptive data from four out of the 16 children who were

identified. In addition, although the vast majority of children in this age group attend kindergarten, attendance is not mandatory, and it is possible that children with SM who were not attending school were missed by this methodology. However, since onset of SM most frequently coincides with entry into the school system (Anstendig, 1999), it is highly likely that children who were not in school would not have yet manifested symptoms of the disorder. Lastly, the study is limited by the small sample size that did not allow for analyses of many key variables.

### Clinical Implications

The current study provides data suggesting that SM is more common than typically believed and that it represents a significant form of emotional disorder in young children. In addition, although the long term outcome of SM is still far from clear, the persistence of SM over the course of a school year in the majority of children identified suggests that efforts to identify and treat SM in children should be amplified. A current common clinical strategy with regard to SM is to watch and wait until children "grow out of it." However, given the efficacy of known interventions such as cognitive-behavioral therapy (Kendall et al., 1997) and selective serotonin reuptake inhibitor medication (RUPP Anxiety Study Group, 2001) for children with related anxiety disorders and SM (Black and Uhde, 1994), and the persistence of SM in this sample, treatment efforts should be strongly considered when children present with SM. Although the present study supports our current understanding of the link between SM and social anxiety, longer term follow-up of a larger group of SM children is necessary to clarify this relationship, risk of future anxiety psychopathology, and other issues related to the long-term impact of SM.

### REFERENCES

- Achenbach TM (1991), *Manual for the Teacher's Report Form and 1991 Profile*. Burlington: University of Vermont Department of Psychiatry
- American Psychiatric Association (1980), *Diagnostic and Statistical Manual of Mental Disorders, 3rd edition (DSM-III)*. Washington, DC: American Psychiatric Association
- American Psychiatric Association (1987), *Diagnostic and Statistical Manual of Mental Disorders, 3rd edition-revised (DSM-III-R)*. Washington, DC: American Psychiatric Association
- American Psychiatric Association (1994), *Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV)*. Washington, DC: American Psychiatric Association
- Anstendig KD (1999), Is selective mutism an anxiety disorder? Rethinking its DSM-IV classification. *J Anxiety Disord* 13:417-434
- Anxiety Disorders Association of America (1999), *Conference on Treating Anxiety Disorders in Youth: Current Problems and Future Solutions* (monograph). Old Town Alexandria, VA: Anxiety Disorders Association of America
- Beidel DC (1991), Social phobia and overanxious disorder in school-age children. *J Am Acad Child Adolesc Psychiatry* 30:545-552
- Bergman RL, Keller M, Wood J, Piacentini J, McCracken J (2001), Selective Mutism Questionnaire (SMQ): development and findings. Poster session presented at the meeting of the American Academy of Child and Adolescent Psychiatry, Honolulu, October
- Biederman J, Rosenbaum JF, Bolduc-Murphy EA et al. (1993), A three-year follow-up of children with and without behavioral inhibition. *J Am Acad Child Adolesc Psychiatry* 32:814-821
- Black B, Uhde TW (1994), Treatment of elective mutism with fluoxetine: a double blind, placebo-controlled study. *J Am Acad Child Adolesc Psychiatry* 33:1000-1006
- Black B, Uhde TW (1995), Psychiatric characteristics of children with mutism: a pilot study. *J Am Acad Child Adolesc Psychiatry* 34:847-856
- Brown J, Lloyd H (1975), A controlled study of not speaking in school. *Journal of Associated Workers of Maladjusted Children* 3:49-63
- Carlson JS, Kratochwill TR, Johnston H (1994), Prevalence and treatment of selective mutism in clinical practice: a survey of child and adolescent psychiatrists. *J Child Adolesc Psychopharmacol* 4:281-291
- Dummit IHES, Klein RG, Tancer NK, Asche B, Martin J, Fairbanks JA (1997), Systematic assessment of 50 children with selective mutism. *J Am Acad Child Adolesc Psychiatry* 36:653-660
- Ford MA, Sladeczek IE, Carlson J, Kratochwill TR (1998), Selective mutism: phenomenological characteristics. *Sch Psychol Q* 13:192-227
- Fundudis T, Kolvin I, Garside RF (1979), *Speech Retarded and Deaf Children: Their Psychological Development*. London: Academic Press
- Hayden T (1980), Classification of elective mutism. *J Am Acad Child Psychiatry* 19:118-133
- Johnson DW, Johnson RT (1987), *Learning Together and Alone: Cooperative, Competitive, and Individualistic Learning*. Englewood Cliffs, NJ: Prentice-Hall
- Kagan J, Reznick JS, Clarke C, Snidman N, Garcia-Coll C (1984), Behavioral inhibition to the unfamiliar. *Child Dev* 55:2212-2225
- Kagan J, Reznick JS, Snidman N (1987), The physiology and psychology of behavioral inhibition in children. *Child Dev* 58:1459-1473
- Kagan J, Reznick JS, Snidman N (1988), Biological bases of childhood shyness. *Science* 240:171-176
- Kendall PC, Flannery-Schroeder E, Panicelli-Mindel SM, Southam-Gerow MA, Henin A, Warman M (1997), Therapy for youths with anxiety disorders: a second randomized clinical trial. *J Consult Clin Psychol* 65:366-380
- Kopp S, Gillberg C (1997), Selective mutism: a population-based study: a research note. *J Child Psychol Psychiatry* 38:257-262
- Kristensen H (2001), Multiple informants' report of emotional and behavioural problems in a nation-wide sample of selective mute children and controls. *Eur Child Adolesc Psychiatry* 10:135-142
- Kumpulainen K, Rasanen E, Raaska H, Somppi V (1998), Selective mutism among second graders in elementary school. *Eur Child Adolesc Psychiatry* 7:24-29
- La Greca AM, Stone WL (1993), The Social Anxiety Scale for Children-Revised: factor structure and concurrent validity. *J Clin Child Psychol* 22:17-27
- Leonard HL (2000), Selective mutism. In: *Kaplan & Sadock's Comprehensive Textbook of Psychiatry*, 7th ed, Vol 1, Sadock BJ, Sadock VA, eds. Philadelphia: Lippincott Williams & Wilkins, pp 2777-2781
- Masten WG, Stacks JR, Caldwell-Colbert AT, Jackson JS (1996), Behavioral treatment of a selective mute Mexican-American boy. *Psychol Sch* 33:56-60
- McCracken JT (2000), Tic disorders. In: *Kaplan & Sadock's Comprehensive Textbook of Psychiatry*, 7th ed, Vol 1, Sadock BJ, Sadock VA, eds. Philadelphia: Lippincott Williams & Wilkins, pp 2711-2719
- Pataki CS (2000), Mood disorders and suicide in children and adolescents. In: *Kaplan & Sadock's Comprehensive Textbook of Psychiatry*, 7th ed, Vol 1, Sadock BJ, Sadock VA, eds. Philadelphia: Lippincott Williams & Wilkins, pp 2740-2757
- Piacentini J, Bergman RL (2000), Obsessive-compulsive disorder in children. In: *Kaplan & Sadock's Comprehensive Textbook of Psychiatry*, 7th ed, Vol 1, Sadock BJ, Sadock VA, eds. Philadelphia: Lippincott Williams & Wilkins, pp 2758-2762
- Research Unit on Pediatric Psychopharmacology Anxiety Study Group (2001), Fluvoxamine for the treatment of anxiety disorders in children and adolescents. *N Engl J Med* 344:1279-1285

- Shaffer D, Gould MS, Brasic J et al. (1983), A children's global assessment scale (CGAS). *Arch Gen Psychiatry* 40:1228-1231
- Steinhausen HC, Juzi C (1996), Elective mutism: an analysis of 100 cases. *J Am Acad Child Adolesc Psychiatry* 35:606-614
- Tancer NK (1992), Elective mutism: a review of the literature. *Adv Clin Child Psychol* 14:265-288
- Tancer NK, Klein RG (1991), Elective mutism: a review of the literature. In: *DSM-IV Source Book*. Washington, DC: American Psychiatric Association
- Vasey MW (1995), Social anxiety disorders. In: *Clinical Handbook of Anxiety Disorders in Children and Adolescents*, Eisen A, Kearney C, Schaefer C, eds. Northvale, NJ, London: Jason Aronson
- Volkmar FR, Klin A (2000), Pervasive developmental disorders. In: *Kaplan & Sadock's Comprehensive Textbook of Psychiatry*, 7th ed, Vol 1, Sadock BJ, Sadock VA, eds. Philadelphia: Lippincott Williams & Wilkins, pp 2659-2678
- Wilkins R (1985), A comparison of elective mutism and emotional children. *Br J Psychiatry* 146:198-203
- Wright HH, Holmes GR, Cuccaro ML, Leonhardt TV (1994), A guided bibliography of the selective mutism (elective mutism) literature. *Psychol Rep* 74:995-1007
- Wright HH, Miller MD, Cook MA, Littman JR (1985), Early identification and intervention with children who refuse to speak. *J Am Acad Child Psychiatry* 24:739-774