Reading Problems, Psychiatric Disorders, and Functional Impairment from Mid- to Late Adolescence

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ABSTRACT
Objective: To examine psychiatric morbidity and functional impairment of adolescents with and without poor reading skills during mid- to late adolescence. Method: The sample consisted of 188 adolescents, 94 with poor reading skills and 94 with typical reading skills, screened from a larger sample in the public schools at age 15. To assess psychiatric disorders, participants were assessed annually with the Schedule for Affective Disorders and Schizophrenia for School-Age Children-Epidemiologic Version (up to 4.5 years; maximum age, 20 years). Functional impairment was assessed with the Child and Adolescent Functional Assessment Scale. Results: Adolescents with poor reading skills evidenced higher rates of current attention-deficit/hyperactivity, affective, and anxiety disorders, particularly social phobia and generalized anxiety disorder. Anxiety disorders but not affective disorders were related to reading status after controlling for attention-deficit/hyperactivity disorder. Adolescents with poor reading evidenced more functional impairment across multiple areas than youths with typical reading skills, even after considering the presence of comorbid attention-deficit/hyperactivity disorder. Conclusions: The increased psychiatric morbidity and functional impairment of adolescents with reading problems highlight the importance of developing interventions that help these youths address reading deficits and associated vulnerabilities during the last years of secondary school. J. Am. Acad. Child Adolesc. Psychiatry, 2007;46(1):25-32.

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Mid- to late adolescence is a period of transition that may be particularly daunting for youths who have reading difficulties (Lyon, 1998; Maughan, 1995). For example, adolescents with reading difficulties often find academic demands frustrating (McNulty, 2003) because reading is central to much of their coursework (Lyon, 1998). Given years of frustration in school, adolescents with poor reading often have lowered self-esteem and decreased motivation to learn (Lyon, 1998) and experience embarrassment and anxiety in situations in which they are required to read or write (Maughan, 1995). Not unsurprisingly, they drop out of school at higher rates than their peers without reading problems (Daniel et al., in press), may be less inclined to pursue postsecondary school education or training, and often have fewer options as they plan for the future (Lyon, 1998).
Despite these challenges, there has been relatively little controlled, prospective, repeated-assessments research examining the psychiatric morbidity and functional impairment associated with poor reading ability from mid- to late adolescence. For example, cross-sectional studies have indicated higher rates of separation anxiety (Livingston, 1990) and overanxious disorder (Wilcutt and Pennington, 2000b) for younger children with reading problems relative to comparison youths. In an epidemiological study of 9- to 15-year-olds, higher rates of anxiety disorders were associated with literacy difficulties, defined as poorer-than-expected single-word reading or spelling (Carroll et al., 2005). In a longitudinal study, youths with various types of language impairment as a group had higher rates of anxiety disorders, in particular social phobia, by late adolescence than peers without such difficulties (Beitchman et al., 2001b).

Depressive disorders also have been associated with reading disabilities among younger children in clinical settings (Kashani et al., 1982; Livingston, 1990), but a relationship between depressive disorders and literacy difficulties was not evident in an epidemiological study (Carroll et al., 2005). Moreover, in a study of primarily younger youths, significant depressive symptoms were present mostly among girls with reading disabilities (Willcutt and Pennington, 2000b). Little is known about the risk of depressive disorders among poor readers relative to typical readers during mid- to late adolescence.

In epidemiological studies, conduct and oppositional disorders were associated with literacy difficulties (Carroll et al., 2005), and reading problems at age 9 predicted later conduct disorder (Williams and McGee, 1994). Such differences were not found, however, in a clinical sample (Livingston, 1990) or between co-twins discordant for reading problems (Willcutt and Pennington, 2000b). Language impairment among 19-year-olds (primarily males) was associated with higher rates of antisocial personality disorder, and substance use disorders were associated with higher rates of mathematics and spelling disabilities but not reading disabilities (Beitchman et al., 2001a,b). Maughan et al. (1996) similarly failed to find an association between reading problems during childhood and alcoholism in adulthood.

The link between reading difficulties and attention-deficit/hyperactivity disorder (ADHD) is well established (Hinshaw, 1992). Nonetheless, adolescents diagnosed with ADHD as children often do not evidence the full ADHD syndrome as they get older (Biederman et al., 2000), so it is not clear whether reading and ADHD are related in adolescence in the same way that they are for younger children. Moreover, because ADHD is associated with multiple psychiatric comorbidities (Biederman et al., 1996), it is not always clear whether non-ADHD psychiatric comorbidities among youths with reading problems are specifically related to reading difficulties or to the presence of ADHD (Carroll et al., 2005). Results from two cross-sectional studies, one of preadolescents and one of youths 9 to 15 years of age, indicated that externalizing behavioral problems with learning difficulties may have an association with co-occurring ADHD symptoms (Carroll et al., 2005; Willcutt and Pennington, 2000a).

Finally, it has been suggested that youths and young adults with reading disabilities may experience functional impairment in a number of different life areas (Maughan, 1995), but few, if any, studies of poor and typical readers have examined functional impairment across multiple life areas using standardized and psychometrically sound assessment instruments. In this regard, it is important to note that even youths not meeting diagnostic criteria for psychiatric disorders can show evidence of impairment (Angold et al., 1999). Moreover, to the extent that reading status is associated with functional impairment, it is not clear whether the impairment is attributable to the reading problems per se or to the presence of comorbid ADHD.

This study was designed to examine whether psychiatric morbidity (i.e., rates of ADHD, affective disorders, anxiety disorders, conduct and oppositional defiant disorder, and substance use disorders) and functional impairment differed between adolescents with poor reading and their peers with typical reading skills during mid- to late adolescence. To the extent that there is greater non-ADHD psychiatric morbidity and functional impairment among adolescents with reading problems, we were interested in determining the degree to which these difficulties were attributable to co-occurring ADHD. We also were interested in whether the risk of psychiatric disorders and functional impairment evidenced by poor and typical readers differed as a function of increasing age, gender, or ethnicity.

This article is the primary report from a recently completed longitudinal study of adolescents with and
without poor single-word reading skills observed for up to 4.5 years. In previous reports, we described the emotional symptoms and behaviors of adolescents with and without poor reading ability as assessed with self-report questionnaires and behavior checklists at an interim point in the study (Arnold et al., 2005) and documented the relationship between suicidality and school dropout among these youths (Daniel et al., in press).

METHOD

Participants

Adolescents in four urban schools and two rural schools within a 30-mile geographical radius participated in screening assessments of their reading skills to identify youths with and without reading difficulties. Adolescents were screened at the age of 15 so that potential participants could be identified before their 16th birthdays (when they could legally drop out of school in the state in which this study was conducted). For participation in the follow-up study, adolescents needed to have at least one living and available parent or legal guardian, to have written consent from a parent or legal guardian, not to have a sibling enrolled in this study, not to be in classes for educable people with mental disabilities, and to have English as a first language.

Of 1,074 adolescents in the screening sample, 1,062 were eligible for the study. Of this sample, a convenience sample of poor readers (described later) was chosen. Using the method of frequency distribution matching, we recruited typical readers from the same gender and ethnicity strata as the adolescents with poor reading to achieve a rough balance in demographic characteristics of the two groups. Within each school, approximately equal numbers of youths with poor and typical reading skills were recruited. All together 239 adolescents and families received preliminary contacts about participation in the study, and 222 (93%) responded to those contacts. Of those, 94 of 114 adolescents (83%) with poor reading skills and 94 of 108 adolescents (87%) with typical reading skills were recruited. The overall reading level of the schools, assessed with the Woodcock-Johnson Letter-Word Identification test (described below), was at the late 9th grade level (range, grade 8.2–10.7).

The longitudinal sample was 55% male and had a large representation of ethnic minorities: 52% black, 44% white non-Hispanic, 2% Hispanic, and 2% self-identified as biracial. The socioeconomic status of adolescents at the beginning of the study as classified by the Hollingshead (1957) Index was as follows: I (highest) = 4.8%; II = 8.0%; III = 36.7%; IV = 35.6%; and V (lowest) = 14.9%. The groups of youths with poor and typical reading skills did not differ in socioeconomic status (dichotomized for purposes of analyses as high (I–III) versus low (IV and V; \( p > .10 \)).

Research Assessments

Reading Skills. The schools in this study agreed to screenings of all 15-year-olds in their 10th grade classes for whom consent was obtained so that they could better gauge how the reading ability of youths in their schools compared with national norms. The Letter-Word Identification subtest of the Woodcock-Johnson Psychoeducational Battery-Revised (Woodcock and Johnson, 1990) assesses single-word reading skills and was used as the primary reading measure. Single-word reading ability is the common outcome of a number of reading-related processes and deficits (Wood and Grigorenko, 2001) and has been used to indicate reading-related literacy in epidemiological research (Carroll et al., 2005). Tests of single-word reading ability often are used in individualized assessments for educational planning purposes, in conjunction with assessments of reading-related processes and skills such as comprehension, decoding ability, and phonemic awareness.

Participants with a raw score below 45 were classified as having reading difficulties. Those with scores of 45 and higher were not considered to have reading problems. This cutoff score corresponds to the 18th percentile for age 16 years, 0 months according to the national norms on the Woodcock-Johnson Psychoeducational Battery-Revised. This percentile cutoff was used because it approximates the proportion of individuals found to have the “single-word phenotype” in our genetic studies of reading (Grigorenko et al., 2000). The group of adolescents defined as poor readers also had poorer performance on another test of single-word reading and poorer performance on tests of phonemic awareness, decoding skills, and fluency administered during the follow-up relative to their peers without reading difficulties (Daniel et al., in press). A cutoff on the test of single-word reading was used to define groups rather than discrepancy criteria (i.e., discrepancies between performance on purported tests of ability and achievement) because the validity of discrepancy criteria has been questioned (e.g., Sternberg and Grigorenko, 2002; Steubing et al., 2002).

Psychiatric Disorders. Psychiatric diagnoses were assessed with the Schedule for Affective Disorders and Schizophrenia for School-Age Children-Epidemiologic Version (K-SADS-E; Orvaschel and Puig-Antich, 1994), a semistructured interview with evidence of reliability and validity in samples of adolescents through age 18 (e.g., Esposito and Clum, 2002). In an ancillary procedure to the K-SADS-E, important dates such as holidays and life events were recorded on a timeline and used as a reference to estimate the onset and offset dates of individual symptoms. The K-SADS-E was administered to adolescents and adult informants (typically parents or guardians) until adolescents were 18 years of age or living independently. Interviewers were extensively trained master’s degree–level clinicians.

For purposes of statistical analyses, we focused on several groups of psychiatric diagnoses diagnosed in accordance with DSM-IV (American Psychiatric Association, 2000): affective disorders, anxiety disorders, ADHD, conduct and oppositional disorders, and substance use disorders. Affective disorders referred to major depressive disorder, dysthymic disorder, and depressive disorders not otherwise specified. Anxiety disorders referred to any disorders in the sections on anxiety disorders or anxiety disorders of childhood or adolescence in DSM-IV assessed with the K-SADS-E, except for posttraumatic stress disorder. ADHD referred to any subtype of this disorder. Conduct and oppositional disorders referred to the presence of conduct or oppositional defiant disorder. Substance use disorders referred to any psychoactive substance abuse or dependence disorder other than nicotine dependence. As described later, we also analyzed separately data for disorders with >5% average prevalence in at least one of the two groups.

At the index interview, we assessed the presence of symptoms in the preceding year unless information before the year was necessary for establishing the correct diagnosis. For example, for ADHD, we obtained lifetime history of clinically significant symptoms and behaviors, as well as current symptoms. In follow-up interviews, we assessed whether symptoms were present currently at any time.
Adolescents were followed up for up to 4.5 years (median = 3.3 years) for a total of 722 assessments (maximum of 4 per subject). Three percent of the sample (four with poor reading ability, one with typical reading) withdrew from the study before its completion. An additional 6% of the sample (n = 12) were living overseas (in the military), could not be located, or otherwise could not be contacted for a final assessment.

Statistical Methods

The presence of psychiatric diagnoses at each assessment was modeled as a function of reading status. Regression parameters were estimated and within-subject correlations were modeled with generalized-estimating-equation logistic-regression models (Liang and Zeger, 1986). These models provide an odds ratio (OR) interpretation for overall rates of disorders between adolescents with poor reading skills and with typical reading skills during the course of the follow-up. All of the models assume that the correlation between any two observations within subjects is constant.

Both univariate models (diagnostic groups as a function of reading status) and multivariate models (outcomes as a function of reading status, sociodemographic variables, and ADHD when appropriate) were examined. When diagnostic outcomes were modeled as a function of comorbid ADHD, we focused on current ADHD (full syndrome or in partial remission) rather than lifetime history of ADHD because previous analyses with continuous measures of behavioral and emotional symptoms highlighted stronger associations for the presence of current ADHD than for lifetime history of ADHD (Arnold et al., 2005). Models including current ADHD as a main effect were used to ascertain whether the effects of reading status were due to the presence of ADHD. These models did not include other psychiatric disorders as covariates.

To determine whether diagnostic differences emerged as the cohort grew older, we examined the interaction between reading status and age in multivariate models. We similarly examined whether diagnostic differences varied by gender or ethnicity by including interaction terms in the multivariate models. In some cases, the interaction models could not be computed because the outcome was completely determined by the components of the interaction. In these cases, we present descriptive information about the patterns in the data.

Discrete time-hazard models (Allison, 1984; Cox, 1972) were used to estimate the average prevalence of the different diagnoses and diagnostic groups during the course of the study. For these models, we used a logit transformation of the hazard and estimated coefficients for the survival models using logistic regression.

Generalized estimating equations (Liang and Zeger, 1986) also were used to model the total and five CAFAS impairment area scores (converted to an ordinal scale) at each assessment. That is, the likelihood or probability of obtaining “higher” values on the CAFAS was modeled using a form of multinomial regression. In the initial set of models, outcomes were modeled as a function of reading status and whether the young adult version of the CAFAS was used. In a second series, outcomes also were modeled as a function of sociodemographic variables and the presence of ADHD. Similar to models of psychiatric disorders, we examined interaction terms denoting gender by reading group, ethnicity by reading group, and age by reading group differences.

The longitudinal statistical methods used in this study are capable of accommodating missing data, different amounts of data per participant, and data collected at irregularly spaced intervals.
RESULTS

Reading Status and Psychiatric Morbidity

The average rates over time of the psychiatric diagnostic groups and most common psychiatric disorders (>5% in at least one of the reading groups) are presented in Table 1. In unadjusted models, current ADHD, affective disorders, and anxiety disorders were more common over time among poor readers than among adolescents without reading problems (OR 4.12, SE 1.97, \(p = .003\); OR 1.99, SE 0.68, \(p = .042\); and, OR 3.80, SE 1.42, \(p < .001\)). Social phobia and generalized anxiety disorder (GAD), in particular, were more common among poor readers than among typical readers (OR 5.73, SE 3.38, \(p = .003\); and, OR 5.44, SE 3.80, \(p = .015\)). In models adjusting for sociodemographic variables, it was found that current ADHD and anxiety disorders, primarily social phobia and GAD, were more likely among youth with reading problems than among youths with typical reading ability (OR 3.56, SE 1.81, \(p = .012\); OR 4.25, SE 1.66, \(p < .001\); OR 6.15, SE 3.59, \(p = .002\); and OR 5.35, SE 3.60, \(p = .013\)). After including current ADHD in addition to the sociodemographic variables, only anxiety disorders, including GAD and social phobia, were found to be reliably related to reading status (OR 3.63, SE 1.48, \(p = .002\); OR 5.69, SE 3.32, \(p = .003\); and OR 5.35, SE 3.61, \(p = .013\)).

Reading Status, Gender, and Ethnicity

White adolescents with reading problems were more likely to have substance use disorders than minority youths (OR 1.85, SE 0.88, \(p = .035\)). In addition, the reading status by gender interaction term could not be computed for current ADHD because all of the girls with current ADHD were in the poor reading group. There was no other evidence of gender or ethnic differences in psychiatric morbidity associated with reading.

Reading Status and Developmental Changes

Substance use disorders were the only set of disorders that changed differentially with increasing age between adolescents with poor reading and adolescents with typical reading (\(b = 0.381\), SE 0.159, \(p = .017\)). Specifically, as the adolescents got older, there were a proportionately greater number of individuals with poor reading who began to evidence substance use disorders relative to typical readers.

Functional Impairment

Average functional impairment scores over time for the two reading groups are presented in the bottom half of Table 1. In the models of CAFAS scores unadjusted for sociodemographic variables and ADHD, reading status was related to overall impairment and impairment in each of the content areas except for substance abuse (overall impairment: \(b = 0.98\), SE 0.25, \(p < .001\); role functioning: \(b = 0.79\), SE 0.23, \(p < .001\); behavior toward others: \(b = 1.18\), SE 0.36, \(p = .001\); moods and self-harm: \(b = 0.95\), SE 0.26, \(p < .001\); and thinking: \(b = 3.08\), SE 1.07, \(p = .004\)). Similar results were obtained after controlling for sociodemographic variables and the presence of ADHD (overall impairment: \(b = 0.77\), SE 0.25, \(p = .002\); role functioning: \(b = 0.62\), SE 0.22, \(p = .006\); behavior toward others: \(b = 1.05\), SE 0.35, \(p = .002\); moods and self-harm: \(b = 0.79\), SE 0.25, \(p = .002\); and thinking: \(b = 2.92\), SE 1.07, \(p = .006\)).

There were no age or gender differences in overall functional impairment or in the specific areas of

| TABLE 1  |
|-------------------|-------------------|
| **Outcomes**       | **Poor Readers**   | **Typical Readers** |
| Psychiatric disorders, % |                  |                  |
| Affective disorders       | 14.4              | 7.9              |
| Major depressive disorder | 12.9              | 7.9              |
| Anxiety disorders      | 23.9              | 7.6              |
| Social phobia          | 15.2              | 3.0              |
| Simple phobia         | 6.8               | 3.0              |
| Generalized anxiety disorder | 8.2              | 1.6              |
| Disruptive behavior disorders | 24.8              | 10.9             |
| Conduct/oppositional disorders | 10.1              | 6.0              |
| Attention-deficit/hyperactivity disorder | 18.0              | 4.9              |
| Substance use disorders | 14.9              | 10.1             |
| Functional impairment* |                  |                  |
| Role functioning       | 6.93 (0.84)       | 3.44 (0.54)      |
| Behavior toward others | 2.51 (0.49)       | 0.92 (0.27)      |
| Mood/self-harm        | 5.98 (0.75)       | 2.63 (0.47)      |
| Substance use         | 3.31 (0.65)       | 3.23 (0.61)      |
| Thinking              | 0.71 (0.28)       | 0.03 (0.03)      |
| Total impairment      | 19.25 (2.27)      | 10.24 (1.47)     |

* Child and Adolescent Functional Assessment average scores and standard errors (adjusted for within-subject correlations across assessments).

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functioning. However, there was evidence of possible ethnic differences. Specifically, among white but not minority adolescents, there were indications that poor reading may be associated with greater impairment in behavior toward others and substance use relative to adolescents without reading problems \((b = 2.11, SE 0.88, p = .017; \text{and } b = 1.82, SE 0.64, p = .005)\). With regard to the latter, minority youths with reading problems actually had less impairment associated with substance use than their typical reading peers. Interaction terms could not be computed for impairment in thinking because of the small number of individuals showing impairment in this domain.

**DISCUSSION**

During mid- to late adolescence, individuals with reading difficulties had higher rates of psychiatric morbidity and greater functional impairment across multiple areas of living. These difficulties appeared to be relatively unchanging over time, except for increased substance use disorders among poor readers as adolescents grew older. These findings extend reports of increased psychiatric morbidity among younger samples (Carroll et al., 2005) and complement descriptive and anecdotal reports about the psychosocial difficulties encountered by adolescents with reading problems (Lyon, 1998; Maughan, 1995; McNulty, 2003). The mid- to late adolescent years present numerous challenges for young people with reading problems as they try to complete school and plan for the future. The result of such stresses may be increased rates of psychosocial difficulties and psychiatric disorders. Alternatively, it could be that emerging psychosocial or psychiatric difficulties further contribute to reading problems.

Among the psychiatric disorders, anxiety disorders were three times more prevalent; in particular, social phobia and GAD were both five times more prevalent among poor readers than among typical readers. The results regarding anxiety disorders extend findings of increased rates of anxiety disorders from an epidemiological study of 9- to 15-year-olds with spelling or reading difficulties (Carroll et al., 2005) and replicate the findings from a longitudinal study of youths with language impairment (Beitchman et al., 2001b). In particular, the 15% rate of social phobia among adolescents with reading problems in this study is similar to the 16% rate observed by Beitchman et al. (2001b). A number of adolescents with reading problems in this study described apprehension about speaking or reading in public because of fears of chastisement from peers or criticism from teachers. Many of the adolescents with social phobia had skipped classes or accepted lower grades rather than talk in front of the class or make presentations, and they experienced social anxiety in other situations. These subjective reports are consistent with reports from a qualitative study of individuals with learning disabilities having “heightened self-consciousness” and traumatic “public experiences of failure” (McNulty, 2003).

The rates of affective disorders (primarily major depression) were \(\approx 80\%\) higher among adolescents with poor reading skills relative to those without reading difficulties, although the difference between groups was reliable only at the trend level after controlling for sociodemographic variables. In addition, greater functional impairment was observed in the area of mood and self-harm among the adolescents who had difficulties with reading. These results complement earlier findings of higher rates of suicidal ideation and attempts among adolescents with poor reading skills, which in turn are related to higher rates of dropping out of secondary school (Daniel et al., in press).

Rates of conduct and oppositional defiant disorders did not reliably differ between the reading groups. In this regard, Maughan et al. (1996) reported that there was a decrease in behavior problems among boys with reading disabilities from middle childhood through adolescence. The lack of differences in rates of these disorders notwithstanding, adolescents with poor reading skills did, as a group, evidence more impairment in the area of behavior toward others than their peers without reading difficulties. Although this may reflect a degree of diagnostically subthreshold externalizing behavioral problems, it should be noted that the average functional impairment in this area was modest.

Building on previous findings among younger youths, we found that ADHD and its residual symptoms were strongly related to reading problems from mid- to late adolescence. However, even after accounting for the presence of ADHD, we found reading difficulties to be associated with higher rates of anxiety disorders, particularly social phobia and GAD, and multiple areas of functional impairment. This finding highlights the fact that the greater prevalence of anxiety disorders and functional impairment among adolescents with poor...
single-word reading skills is not simply an artifact of the presence of comorbid ADHD and that reading difficulties are associated with significant psychiatric problems and impairment in their own right.

In contrast to a study of mostly younger youths (Willcutt and Pennington, 2000b), we did not find gender differences, except for current ADHD among girls being present only in poor readers. However, there was evidence of ethnic differences, with white adolescents with reading problems having greater impairment in behavior toward others and substance use and more substance use disorders than white youths without reading problems; these trends were not evident among the minority (primarily black) adolescents. Few studies have examined gender or ethnicity differences in psychiatric disorders and impairment among adolescents who have reading difficulties, and such differences or lack thereof need further examination and replication.

As the adolescents approached young adulthood, there were increasing rates of substance use disorders, particularly for the adolescents with poor reading. This differential increase in prevalence over time was noted only for substance use disorders and was not apparent for other disorders. Late adolescence through young adulthood is the period of time associated with the highest incidence of a variety of substance use disorders (Anthony and Petronis, 1995), so it is not surprising that substance use problems may be an area of emerging difficulty for many individuals with reading disabilities as they grow older.

Limitations

Despite the contributions of this study, several limitations should be noted. Because of sample size considerations, we focused primarily on prevalence rates of disorders rather than on the incidence or onset of new psychiatric disorders. Similarly, we were unable to focus on psychiatric disorders with low base rates or functional impairment in different psychiatric diagnostic groups of poor and typical readers. In addition, best-estimate psychiatric diagnoses were not determined “blind” to reading status, insofar as interviewers often became aware of youths’ reading ability when adolescents and families discussed school or reading issues. Furthermore, although other versions of the K-SADS have been used with older adolescents and young adults (e.g., Duffy et al., 2002), we are not aware of studies documenting the reliability and validity of the K-SADS-E with 19- and 20-year-olds, the upper age range in the present study. Providing a useful complement to previous research with underrepresentations of minority participants, 55% of the current sample was of minority racial/ethnic heritage. Nonetheless, this may limit the generalizability of these findings to other samples or settings. Because this sample was ascertained when youths were in mid-adolescence, these data do not shed light on whether any psychiatric or psychosocial difficulties preceded, evolved concurrently with, or developed after youths first started experiencing difficulties with reading in school. Finally, we were not able to continue obtaining information on the outcomes of this group of individuals through young adulthood and therefore cannot address issues of the resolution or continuation of impairment and psychiatric difficulties during these years.

Clinical Implications

With consideration of these caveats, the findings of this study highlight the relationship between reading difficulties and higher rates of psychiatric morbidity and functional impairment during mid- to late adolescence. These findings demonstrate that anxiety disorders in particular and functional impairment associated with poor reading are independent of the presence of comorbid ADHD. Mid- to late adolescence is clearly a stressful transition period for many youths. Reading assessments for adolescents struggling in school may help identify not only youths in need of more individualized or intensive reading instruction but also youths at risk for multiple psychiatric and psychosocial problems. Clinicians also should be alert to the possibility of reading difficulties among youths presenting with psychiatric difficulties, particularly social anxiety and GAD, and advocate for reading assessments of youths with school difficulties. Effective reading remediation programs, psychosocial interventions for youths with reading problems, or prevention programs focused on assisting these youths as they navigate their last years in secondary school or helping them at younger ages to better prepare for the secondary school years and beyond may yield improved outcomes.

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