# A Summary of Evaluations for Learning and Attention Problems at a University Training Clinic

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**Abstract**

*Over a five year period, a university clinic performed psychological evaluations of 102 adults (including 85 college students) who reported that they were experiencing learning or attention problems. Of 92 persons who completed the evaluation, 40 (43.5%) received no diagnosis, 7 (7.6%) received the diagnosis of ADHD, 29 (31.5%) received the diagnosis of LD, 2 (2.2%) received the diagnoses of both ADHD and LD, and 14 (15.2%) received the diagnosis of some other disorder, such as depression. Those diagnosed with ADHD and/or LD were similar in terms of demographic characteristics, academic history, and most psychological test scores. Those diagnosed with ADHD and/or LD differed significantly from those diagnosed with another disorder or no disorder on high school GPA, the Working Memory and Processing Speed Index scores of the WAIS-R/WAIS-III, and several academic achievement subscales of the WJA-III. Issues concerning the diagnosis of LD and ADHD in university students are discussed.*

Attention-deficit/hyperactivity disorder (ADHD) and Learning Disorder (LD) are most frequently diagnosed in children, but these conditions often persist into and cause difficulty throughout adolescence and into adulthood (American Psychiatric Association, 2000; Javorsky & Gussin, 1994). Indeed, some individuals with ADHD and LD are not diagnosed until high school or even college (Glutting, Monaghan, Adams, & Seslow, 2002).

The exact prevalence of ADHD and LD in the college population is unknown. Glutting et al. (2002) reported various estimates showing that from one to four percent of college students have ADHD. DuPaul, Schaughency, Weyandt, and Tripp (2001) provided evidence that self-reported symptoms of ADHD are relatively common among college students. Further, the U.S. Department of Education (2000) reported that the number of students with disabilities at private four-year colleges or universities is increasing and estimated that, of those students with a disability, over 29% have LDs.

Thus, there is a need for research on LD and ADHD in college students to improve the methods used to evaluate and diagnose these conditions. For example, Giovingo, Proctor, and Prevatt (2005) compared three models for diagnosing LD in a sample of 155 postsecondary students referred for assessment due to academic difficulty. They found that these models provided widely varying numbers (from 37 to 103) of individuals who met diagnostic criteria for LD. Comparing students to grade-matched norms resulted in more diagnoses of LD than did comparing them to age-matched norms.

Maller and McDermott (1997) examined WAIS-R scores of 194 college students with LD and were unable to find a unique WAIS-R profile for the group. Instead, 93.8% of the students with LD had profiles that matched the core profiles of the standardization sample. The remaining 6.2% were highly variable and did not form a distinct LD WAIS-R profile.

Research on LD and ADHD in college students is also important because students with these conditions are likely to experience academic and other problems that may require some form of intervention. For example, Gregg and Hoy (1990) found that college students with LD write with less cohesiveness than other students, which would likely lead them to encounter academic difficulty in courses that require written exams and assignments. Witte, Philips, and Kakela (1998) reported that college graduates who had LD took longer

to graduate and received lower GPAs than other students. Mattek and Wierzbicki (1998) reported that college students with LD experience higher levels of depressive symptoms than other students. Further, Wierzbicki (2005) noted that self-reported symptoms of ADHD and depression are significantly correlated in college students. Finally, ADHD and LD have been associated with higher levels of anxiety in college students (Vance, et al., 2002).

In summary, although ADHD and LD are most often diagnosed in children, they are occasionally first diagnosed in adults. Despite the increasing recognition that these problems continue into adulthood, there is a relative lack of research on LD and ADHD in adults. Additionally, although the number of postsecondary students with ADHD and LD appears to be increasing, there is a lack of research concerning these conditions in college students.

The present study attempted to address this lack of research. The study summarized the psychological evaluations of 102 adults who had been referred for assessment because of learning or attention problems. This summary may provide useful information concerning the occurrence and presentation of LD and ADHD in college students and adults in general.

## Method

*Participants*

Participants were adults who were evaluated for learning or attention problems over five academic years (Fall 1997 through Spring 2003). Evaluations were conducted at a training clinic in a department of psychology at a private midwestern university. Evaluators were graduate students in a doctoral program in clinical psychology; they were supervised by faculty members who are state-licensed psychologists. In this five-year period, 134 adults were evaluated because they were experiencing difficulty at school or work and wondered whether their problem may be due to cognitive limitations, such as those associated with LD or ADHD. Of these, 32 clients did not consent to having their data used in research and were not included in this study.

This left 102 clients whose files were examined. Of these, 10 did not complete the evaluation; 92 completed the evaluation so that a diagnosis could be assigned or ruled out. Diagnoses of LD, ADHD, or other conditions were assigned according to DSM-IV (American Psychiatric Association, 1994) or, after the year 2000, DSM-IV-TR (American Psychiatric Association, 2000) criteria. Diagnoses of LD were based on a clinical judgment of a significant discrepancy between measures of intellectual ability and academic achievement; in practice, 83.9% of participants with a diagnosis of LD received a difference of at least 1.5 standard deviations between measures, and 16.1% received a difference of between 1 and 1.5 standard deviations between measures.

Most participants (85; 83.3%) were college students, but 5 (4.9%) were 18-year-old high school students and 12 (11.8%) had completed college. Fifty (49.1%) were male and 52 (50.9%) were female. The mean age was 23.07 years ($SD$ = 7.22; range = 18 to 56 years). Participants who had completed college were self-referred, whereas the 18-year-old high school students had been referred by their school's counseling staff. Students attending the university at which the clinic is located were referred by the university's Office of Disability Services, which coordinates assistance provided to students who have disabilities. Some students initially presented directly to the clinic, having learned about the clinic's evaluation services through faculty members, academic advisors, the university counseling center, or tutoring services. These students were directed to the Office of Disability Services, which conducts an initial screen to determine whether students may be having academic difficulty for reasons such as inadequate study time or inadequate academic preparation. Students who did not appear to have problems for these reasons were then referred by the Office of Disability Services to the clinic for an evaluation.

*Measures*

Participants completed an intake questionnaire, on which they gave demographic information, identified their presenting problem, and provided information about the history of their presenting problem as well as their social, family, and educational background.

The WAIS-R (Wechsler, 1981) or the WAIS-III (Wechsler, 1997) was administered to most participants to assess intellectual functioning. These tests provide measures of general intellectual ability, verbal and nonverbal intelligence, and four index scores of cognitive skills (Verbal Comprehension, Perceptual Organization, Working Memory, and Processing Speed).

The WJA-R (Woodcock & Johnson, 1989) or the WJA-III (Woodcock, McGrew, & Mather, 2001) was administered to most participants to assess academic achievement. These tests provide measures of five broad academic knowledge areas or skills. Other WJA-R or WJA-III subtests of specific academic abilities were administered. However, because most participants were only administered subtests related to their

reported areas of academic difficulty, most subtests were not administered to sufficiently large numbers of participants to allow meaningful statistical analyses, so those results are not reported here.

Several additional tests were administered to substantial subsets of participants. The Wender Utah Rating Scale (WURS; Ward, Wender, & Reimherr, 1993) is a self-report measure in which adults retrospectively report childhood symptoms of ADHD. The Beck Depression Inventory (BDI; Beck, 1996) and the Beck Anxiety Inventory (BAI; Beck, 1990) are self-report measures of the symptoms of depression and anxiety.

*Procedure*

Client files were examined by one of the researchers. To ensure confidentiality, each client was assigned an identification number. After all data were recorded, the list of identification numbers and corresponding names was shredded.

Several categories of variables were recorded: (a) demographic information (race, gender, age, years of education); (b) academic history (high school GPA, college GPA, ACT composite); (c) symptoms (referral question; prior diagnosis of LD; prior diagnosis of ADHD); (d) intelligence (WAIS-R/WAIS-III FSIQ, VIQ, PIQ, WMI, POI, PSI and VCI, and individual subscale scores); (e) academic achievement (WJA-R/WJA-III broad knowledge area and individual subject scores); (f) diagnosis assigned; and (g) other (WURS, BDI, BAI). The referral question and prior diagnoses of LD and ADHD were initially recorded from the participant's responses to the intake questionnaire. The referral question was therefore based largely on participants' self-report. However, many participants had previously been diagnosed with ADHD or LD or had discussed their academic difficulty with others, such as faculty advisors or tutors, so most participants identified their problem as being due to learning and/or attention. Information concerning prior diagnosis of ADHD or LD was included in the final evaluation report. In several cases, participants reported prior diagnoses of LD or ADHD during interviews that they had not listed on the intake questionnaires.

## Results

*Client Characteristics at Presentation*

*Demographic variables and academic history*. Most participants were Caucasian (81.3%), 5.5% were African-American, 5.5% were Hispanic, 2.2% were Asian, and 5.5% were mixed race or other. The mean years of education was 13.72 ($SD$ = 1.66). The mean high school GPA was 3.15 ($SD$ = 0.62); the mean college GPA was 2.62 ($SD$ = 0.69). The mean ACT composite score was 20.98 ($SD$ = 4.36). In general, participants who were college students resembled the university's student body in age, gender, and race. However, participants had lower ACT composite scores and lower college GPAs than the general university population ($M$s = 26, 3.02, respectively).

*Prior diagnosis*. Some participants had previously been diagnosed with LD or ADHD. These individuals typically sought the current evaluation to qualify for assistance through the university's Office of Disability Services or, if in high school, to qualify for special accommodations when taking college entrance examinations. Nine (8.8%; 7 males, 2 females) had previously been diagnosed with ADHD; 10 clients (9.8%; 7 males, 3 females) had previously been diagnosed with LD; 3 (2.9%; 2 males, 1 female) had previously been diagnosed with both ADHD and LD.

*Referral question*. Referral question was coded as ADHD, LD, or both, based on the participant's presentation of the major problem as involving attentional difficulties, problems learning or performing a specific academic subject, or both. Twenty-three participants (16 male, 7 female) sought assessment for possible ADHD; 38 (15 male, 23 female) sought assessment for possible LD; and 37 (18 male, 19 female) sought assessment for both ADHD and LD. Four participants (1 male, 3 females) did not present their major problem in a way that allowed classification in these three groups and were coded as Other.

The relationship between prior diagnosis (ADHD, LD, both, other, none) and referral question (ADHD, LD, both, other) was examined using a measure of the association between nominal variables, and was determined to be significant (Phi = 0.52, $p < .05$). Clients previously diagnosed with ADHD tended to seek assessment of possible ADHD, whereas clients previously diagnosed with LD tended to seek assessment of possible LD.

*Evaluation Results*

*Test scores*. Table 1 presents the means and standard deviations of measures of participants' intellectual functioning, academic achievement, and emotional distress. In general, intellectual functioning was at the high end of the average range, whereas academic achievement ranged from the average to the low end of the average range. Participants' emotional distress tended to be above average, in the range indicative of mild distress.

**Table 1**

*Mean Intellectual, Academic Achievement, and Emotional Test Scores of Adults Evaluated for Learning or Attention Problems*

| Score | *N* | *M* | *sd* |
|---|---|---|---|
| WAIS | | | |
| Full Scale IQ | 95 | 107.89 | 13.22 |
| Verbal IQ | 95 | 108.94 | 14.14 |
| Performance IQ | 95 | 105.00 | 12.99 |
| Verbal Comprehension Index | 81 | 110.04 | 14.67 |
| Working Memory Index | 81 | 103.68 | 12.74 |
| Perceptual Organization Index | 81 | 106.15 | 13.47 |
| Processing Speed Index | 81 | 97.75 | 15.10 |
| WJA | | | |
| Broad Reading | 80 | 100.88 | 15.26 |
| Broad Math | 80 | 97.15 | 16.12 |
| Broad Written Language | 79 | 94.59 | 14.46 |
| Broad Knowledge | 56 | 90.87 | 17.47 |
| Skills | 54 | 97.92 | 14.45 |
| BDI | 28 | 14.07 | 12.66 |
| BAI | 25 | 12.36 | 10.10 |

*Note. This table combines scores from the WAIS-R and WAIS-III and from the WJA-R and WJA-III.*

*Assigned diagnosis.* Seven (7.6%) of the 92 participants who completed the evaluation were diagnosed with ADHD, 29 (31.5%) with LD, 2 (2.2%) with both ADHD and LD, and 14 (15.2%) with another diagnosis (such as depression or an anxiety disorder); 40 participants (43.5%) received no diagnosis. Thus, 41.30% of adults who were evaluated for learning or attention problems were diagnosed with ADHD, LD, or both.

Three of the 9 clients previously diagnosed with ADHD had their diagnosis confirmed; 3 of the 10 clients previously diagnosed with LD had their prior diagnosis confirmed. Of the three clients who had previously been diagnosed with both ADHD and LD, only 1 client received the diagnosis of LD; the other prior diagnoses were not confirmed.

A test of the association between nominal variables found that assigned diagnosis (ADHD, LD, both, other, none) and referral question (ADHD, LD, both, other) were significantly associated (Phi = 0.46, $p < 0.05$). In general, those assessed for possible learning problems tended to have their diagnosis of LD confirmed (16 of 28), although only 5 of 23 clients as-

sessed for possible attention problems had the diagnosis of ADHD confirmed. Of 37 individuals assessed for both attention and learning problems, 2 were diagnosed with ADHD, 11 were diagnosed with LD, and 1 was diagnosed with both ADHD and LD.

A test of the association between nominal variables determined that assigned diagnosis (ADHD, LD, both, other/none) was not significantly associated with prior diagnosis (ADHD, LD, both, other, none) (Phi = 0.47, $p = .16$). Only six clients with a prior diagnosis of ADHD, LD, or both, had their prior diagnosis confirmed.

*Test Results of Diagnostic Groups*

*ADHD versus LD*. Participants who received the diagnoses of LD and ADHD were compared, excluding the two clients who received both diagnoses. Mean demographic variables, academic history variables, and measures of intelligence, academic achievement, and emotional distress are presented in Table 2. Because the number of participants who were administered some tests was small, separate analyses were conducted for the categories of demographic characteristics and academic history, intelligence test scores, academic achievement scores, and measures of emotional distress. Results are reported only for comparisons in which there were at least four persons in each group.

A MANOVA was conducted to compare those diagnosed with ADHD and LD on the demographic variables of age and years of education. This analysis determined that there was no significant difference between groups, $F(2, 30) = 1.64$, *n.s.*

A MANOVA conducted to compare clients diagnosed with ADHD and LD on the PIQ, VIQ, and FSIQ scores on the WAIS-R/WAIS-III analysis determined that there was no significant difference between groups, $F(3, 32) = 1.02$, *n.s*. A MANOVA was then conducted to compare clients diagnosed with ADHD and LD on the VCI, WMI, POI, and PSI scores of the WAIS-R/WAIS-III. This analysis determined that the groups did not differ significantly on these four measures combined, $F(4,24) = 1.69$, $p = .18$, even though univariate tests showed that the two groups differed on the WMI, $F(1,27) = 4.78$, $p < .05$, and the PSI, $F(1,27) = 5.13$, $p < .05$. On these variables, persons diagnosed with ADHD tended to have higher scores than those diagnosed with LD.

A MANOVA was conducted to compare participants diagnosed with ADHD and LD on WJA-R/WJA-III scales. Persons diagnosed with LD tended to have lower academic achievement scores than clients diagnosed with ADHD. However, the MANOVA showed that the groups did not differ significantly on five broad measures of academic skills, $F(5, 8) = 0.63$, *n.s.*

A MANOVA was conducted to compare individuals diagnosed with ADHD and LD on the BAI and BDI. This analysis determined that, considering the two tests together, there was a nonsignificant trend for the groups to differ, $F(2,8) = 3.38$, $p < .10$. Univariate tests showed that the two groups differed significantly on both the BDI, $F(1,9) = 5.83$, $p < .05$, and the BAI, $F(1, 9) = 6.42$, $p < .05$. On both tests, individuals diagnosed with ADHD reported less emotional distress than those diagnosed with LD.

*ADHD/LD versus other/none*. Participants diagnosed with ADHD/LD were compared to those who received another or no diagnosis. Means and standard deviations for demographic, academic history, intelligence test, academic achievement test, and emotional test scores are in Table 3. Because many participants were missing at least one of the demographic and academic history variables, a multivariate analysis could not be used to examine these variables. Instead, a series of univariate ANOVAs was conducted to compare groups. These analyses determined that participants diagnosed with ADHD/LD did not differ from others on age, $F(1, 90) = 1.27$, *n.s.*, years of education, $F(1, 83) = 0.34$, *n.s*., ACT composite, $F(1, 23) = 0.44$, *n.s*., or college GPA, $F(1, 42) = 0.63$, n.s. However, the groups did differ significantly on high school GPA, $F(1, 43) = 6.00$, $p < .05$. Persons diagnosed with ADHD or LD had lower high school GPAs than others.

MANOVAs were conducted to compare persons diagnosed with ADHD/LD to those diagnosed with none/other on intelligence test scores. The groups did not differ when compared on the three IQ scores, $F(3,87) = 1.34$, *n.s*. However, they differed significantly when compared on the four index scores, $F(4,72) = 3.08$, $p < .05$. Post hoc univariate tests showed that the groups differed significantly on both the WMI, $F(1,75) = 6.68$, $p < .05$, and the PSI, $F(1, 75) = 5.26$, $p < .05$. For both measures, clients diagnosed with ADHD/LD had lower index scores than clients diagnosed with none/other.

A MANOVA was then conducted to compare persons diagnosed with ADHD/LD to those diagnosed with none/other on the WJA-R/WJA-III. This test showed that the groups did not differ on the five broad cluster scores, $F(5, 41) = 1.74$, *n.s*.

A MANOVA determined that participants diagnosed with ADHD/LD versus None/Other did not differ significantly on the two measures of emotional distress, $F(2, 19) = 0.26$, *n.s*.

**Table 2**

*Mean Demographic, Academic History, and Test Scores for Adults Diagnosed with ADHD and LD.*

| | ADHD | | | LD | | |
|---|---|---|---|---|---|---|
| Variable | *N* | *M* | *sd* | *N* | *M* | *sd* |
| Age | 7 | 18.86 | 1.86 | 29 | 22.83 | 6.48 |
| Years Education | 6 | 12.33 | 1.83 | 27 | 13.74 | 1.87 |
| High School GPA | 3 | 2.78 | 0.79 | 13 | 2.88 | 0.47 |
| College GPA | 2 | 1.54 | 0.37 | 18 | 2.63 | 0.58 |
| ACT Composite | 2 | 19.00 | 0.00 | 5 | 20.80 | 4.76 |
| Full Scale IQ | 7 | 108.71 | 5.82 | 29 | 106.38 | 12.85 |
| Verbal IQ | 7 | 110.86 | 2.79 | 29 | 105.93 | 13.46 |
| Performance IQ | 7 | 104.57 | 11.80 | 29 | 105.41 | 12.87 |
| VCI | 6 | 110.00 | 5.97 | 23 | 107.04 | 15.93 |
| WMI | 6 | 105.50 | 5.39 | 23 | 97.13 | 8.88 |
| POI | 6 | 113.00 | 17.71 | 23 | 105.61 | 12.20 |
| PSI | 6 | 101.00 | 8.41 | 23 | 89.09 | 12.06 |
| Broad Reading | 5 | 101.60 | 13.99 | 27 | 95.22 | 15.42 |
| Broad Math | 5 | 103.00 | 5.83 | 27 | 92.30 | 16.06 |
| Broad Written Language | 5 | 93.00 | 10.39 | 26 | 88.92 | 15.17 |
| Broad Knowledge | 5 | 97.20 | 8.61 | 13 | 90.15 | 20.17 |
| Skills | 3 | 103.67 | 9.24 | 13 | 95.23 | 8.43 |
| BDI | 4 | 2.75 | 1.89 | 8 | 17.25 | 11.39 |
| BAI | 4 | 2.25 | 1.50 | 7 | 16.00 | 10.55 |

*Notes. This table combines scores from the WAIS-R and WAIS-III and from the WJA-R and WJA-III. VCI = Verbal Comprehension Index. WMI = Working Memory Index. POI = Perceptual Organization Index. PSI = Processing Speed Index.*

**Table 3**

*Mean Demographic, Academic History, and Test Scores for Adults Diagnosed with ADHD/LD Versus Other/None*

| | ADHD/LD | | | None/Other | | |
|---|---|---|---|---|---|---|
| Variable | *N* | *M* | *sd* | *N* | *M* | *sd* |
| Age | 38 | 22.03 | 5.89 | 54 | 23.78 | 8.20 |
| Years Education | 35 | 13.56 | 1.89 | 50 | 13.77 | 1.50 |
| High School GPA | 16 | 2.86 | 0.51 | 29 | 3.31 | 0.62 |
| College GPA | 21 | 2.53 | 0.64 | 23 | 2.70 | 0.74 |
| ACT Composite | 8 | 20.13 | 3.72 | 17 | 21.38 | 4.68 |
| Full Scale IQ | 38 | 106.84 | 11.46 | 53 | 108.74 | 14.17 |
| Verbal IQ | 38 | 106.53 | 12.03 | 53 | 110.58 | 15.42 |
| Performance IQ | 38 | 105.74 | 12.37 | 53 | 104.68 | 13.22 |
| VCI | 30 | 107.93 | 14.22 | 47 | 111.30 | 15.35 |
| WMI | 30 | 99.60 | 9.63 | 47 | 106.91 | 13.45 |
| POI | 30 | 106.80 | 13.39 | 47 | 106.43 | 13.09 |
| PSI | 30 | 92.83 | 13.97 | 47 | 100.85 | 15.56 |
| Broad Reading | 34 | 96.09 | 15.01 | 42 | 104.31 | 14.98 |
| Broad Math | 34 | 95.06 | 16.00 | 42 | 100.02 | 16.07 |
| Broad Written Language | 33 | 89.18 | 14.56 | 42 | 98.12 | 13.77 |
| Broad Knowledge | 20 | 91.55 | 18.80 | 34 | 90.56 | 17.41 |
| Skills | 18 | 96.94 | 9.51 | 34 | 98.53 | 16.89 |
| BDI | 12 | 12.41 | 11.60 | 15 | 15.20 | 14.12 |
| BAI | 11 | 11.00 | 10.75 | 12 | 12.17 | 8.72 |

*Notes. This table combines scores from the WAIS-R and WAIS-III and from the WJA-R and WJA-III. VCI = Verbal Comprehension Index. WMI = Working Memory Index. POI = Perceptual Organization Index. PSI = Processing Speed Index.*

## Discussion

This article presented the results of psychoeducational evaluations of adults who were assessed for possible learning and attention problems. Of the 92 individuals who completed the evaluation, 41.3% were diagnosed with ADHD, LD, or both. In a previous study at the same university, Wierzbicki (2002) found that only 29.4% of college students who had been evaluated because of academic difficulties were diagnosed with ADHD or LD. The difference between the results of the present and the previous study may be due to the fact that, in Wierzbicki (2002), the students had been referred by the university's Office of Disability Services to psychologists in the surrounding community, whereas the evaluations in the present study were all conducted by a single clinic located within the university. Having a single clinic perform the evaluations should result in assessments that are better standardized, and therefore likely to be more accurate than when students are evaluated at a variety of clinics.

The results show that adults diagnosed with LD and ADHD did not differ from one another in measures of intellectual ability and academic achievement. In general, participants diagnosed with ADHD and LD tended to have IQ test results in the upper end of the average range, and to have academic achievement test scores in the lower half of the average range. This is consistent with the finding of Maller and McDermott (1997) that college students with LD do not exhibit a distinct WAIS-R profile.

Still, it is possible that differences exist between groups diagnosed with ADHD and LD and might be detected when larger samples are compared. For example, participants diagnosed with ADHD had higher working memory and processing speed index scores than those diagnosed with LD. However, the multivariate comparison of groups of all four index scores did not indicate that group differences were significant, likely because of the limited sample size.

Participants in this study who were diagnosed with ADHD and/or LD tended to have lower academic achievement scores than others. Most participants sought the evaluation because of academic difficulty. The assessment demonstrated that adults diagnosed with LD or ADHD tend to have lower academic achievement than individuals who are experiencing academic difficulty but who are not diagnosed with ADHD or LD.

The study also found that adults with LD report more emotional distress than adults with ADHD. On both the BAI and the BDI, participants diagnosed with LD had mean scores in the moderate range, whereas adults with ADHD had mean scores in the average range. This suggests that adults with LD experience more difficulty in coping with the demands of school or work than do adults with ADHD even when they have comparable levels of intellectual ability. This result is consistent with the finding of Mattek and Wierzbicki (1998) that college students with LD report higher levels of depressive symptoms than other college students, and the finding of Heiligenstein, Guenther, Levy, Savino, and Fulwiler (1999) that, despite their academic difficulties, college students who have ADHD do not differ from a control group of students in terms of psychological impairment.

Still, it is important to recognize that other research has shown that adults with ADHD tend to experience more psychological problems, including both depression and anxiety, than other adults (Marks, Newcorn, & Halperin, 2001; Weiss, Hechtman, & Weiss, 1999). The finding in this study that adults diagnosed with ADHD were in the average range on measures of depression and anxiety may have been due to the limited sample or the fact that, as college students at a private university, they may have a higher general level of functioning than other adults who have ADHD.

It is important to note that the measures of emotional distress in this study were only administered when the evaluator determined that emotional adjustment was an issue for a given client. Thus, emotional distress was assessed only in subsamples of LD and ADHD participants. It is possible that the observed difference in emotional distress between adults with LD and ADHD was due to the small sample sizes, and therefore may not generalize to the general populations of adults with these conditions. For this reason, it is important that future research continue to examine the differences in emotional adjustment between adults with ADHD and LD.

Many adults who report problems in school or work do not have the diagnoses of ADHD or LD. In this study, 43.5% of clients who completed the evaluation did not receive a diagnosis. These individuals generally were found to be experiencing difficulty at school or work because of limited study skills, cognitive ability, academic preparation, time devoted to studying, or motivation. Although these clients did not meet DSM-IV criteria for ADHD or LD, they still could benefit from services such as training in time management, study skills, or academic remediation.

Psychological conditions other than ADHD and LD can also cause significant problems at school or work. In the present study, 15.2% of clients received a diag-

nosis other than ADHD or LD; most typically, these other diagnoses were mood or anxiety disorders. Some clients who described their problems as attentional, because they had trouble focusing on lectures or reading, were eventually diagnosed with another problem that can interfere with concentration, such as depression, posttraumatic stress disorder, or adjustment disorder. Other clients who described their problem as attentional, because they had difficulty sustaining concentration, were eventually diagnosed with another condition that is associated with racing or intrusive thoughts, such as bipolar disorder or obsessive-compulsive disorder. Thus, psychologists who evaluate adults for possible ADHD or LD should consider other conditions that can interfere with cognitive performance.

The study found that the referral question was associated with the diagnosis assigned. That is, individuals who sought evaluations for "attention problems" received the diagnosis of ADHD more than did those who sought evaluations for "learning problems." Thus, although some clients present with nonspecific complaints of "academic difficulty," many present with a clear idea of the nature of their academic problem.

Still, the client's description of the presenting problem is not necessarily accurate. For example, one client identified her problem as "attentional" because she reportedly had difficulty paying attention to and understanding lectures. This client sought an evaluation for ADHD after her younger brother had been diagnosed with ADHD, and she wondered whether her trouble in college may be due to the same condition. The assessment showed that this client had an LD in receptive language. Thus, her trouble attending to lectures was due to a language processing rather than an attentional problem.

The association between prior and current diagnoses of ADHD and LD was found not to be significant. For some participants who previously had been diagnosed with ADHD, this diagnosis was not confirmed in the present evaluation. It is possible that their condition, originally diagnosed correctly, had been corrected or so diminished that it no longer met clinical criteria. DuPaul et al. (2001) suggested that many symptoms of ADHD fade over time, which may lead to the underdiagnosis of ADHD in adults who, nonetheless, may continue to experience some academic difficulty.

Diagnosing ADHD in adults is often difficult. One of the diagnostic criteria for ADHD is that its symptoms occur before age 7 years (American Psychiatric Association, 2000). Even though adult clients may exhibit sufficient current symptoms to meet diagnostic criteria for ADHD, a diagnostician may find it difficult to determine whether these symptoms were present before age 7. Relying on retrospective accounts of childhood symptoms introduces error and may lead to misdiagnoses (Wierzbicki, 2005). For this reason, Taylor and Keltner (2002) suggested a new diagnosis that allows for later-onset of ADHD, especially in women. Future research could examine this suggestion of expanding the age requirement for diagnosis of ADHD.

Another possible reason why the association between prior and current diagnoses of ADHD was not significant is that some of the prior diagnoses may have been inaccurate. Some evaluators and instruments may overestimate the occurrence of ADHD. For example, Schatz, Ballantyne, and Trauner (2001) used the Test of Variable Attention (TOVA), a computerized test of ability to sustain attention, as part of an assessment of ADHD. In a population of control subjects who had no significant symptoms of ADHD on other measures, 30% obtained TOVA scores consistent with the diagnosis of ADHD. In the present study, previous diagnoses of ADHD or LD had been assigned by a variety of school systems, mental health professionals, and pediatricians. The prior evaluations of clients were not standardized and may have been less accurate than the evaluations in the present study.

For example, one participant had been diagnosed with ADHD about 18 months before being evaluated at the clinic in this study. The prior diagnosis had been assigned by a general practitioner at a time when the client was working fulltime, attending an evening training program, and experiencing the break-up of a relationship. The client told his physician that he was having trouble concentrating on his evening studies, at which time he was diagnosed with ADHD and prescribed Ritalin. The client tried the medication for a week, did not find it useful, and stopped taking it. He later sought a more thorough evaluation from the clinic in this study because he was about to graduate from college and would be unable to enter a military officer training program if the diagnosis of ADHD remained on his record. The client's evaluation did not demonstrate any attentional difficulty, so the clinic's finding of no diagnosis did not support his prior, likely inaccurate, diagnosis.

Because prior diagnoses of LD or ADHD are not always accurate or current, it is important for university Offices of Disability Services to evaluate carefully the documentation provided by students to verify the existence of these conditions. For example, in an early investigation on this topic, McGuire and Madaus (1996)

found that the documentation of LD at a major university was problematic, because assessments were not always comprehensive, based on valid measures, or standardized. In 1997, the Association on Higher Education and Disability (AHEAD) approved a set of standards for documentation of disabilities, which were revised in 2005 (AHEAD, 1997, 2005). According to these standards, evaluations should be conducted by appropriately credentialed professionals who use appropriate diagnostic methods, should include the diagnosis of the disability, and address how the disability limits current functioning and is likely to affect future functioning. Professionals who evaluate college students and other adults for possible LD or ADHD should attend to these standards.

There are several limitations to this study. First, most of the participants were students at a private university. This university is selective, so students typically have histories of successful academic performance. For this reason, they may not be representative of adults with LD and ADHD who attend less selective universities or who do not attend college.

Another limitation was that the evaluations were conducted over a five-year period. It is possible that cohorts of students at the university change from year to year, given changes in admissions standards. Similarly, even though all the evaluations were conducted within a single clinic, new editions of the intelligence and academic achievement tests and of the diagnostic criteria were published during the period in which the evaluations were conducted. For this reason, the evaluations were not conducted in as standardized a fashion as would have occurred if all evaluations had been conducted in a single year.

Psychologists should continue to investigate LD and ADHD in college students and adults in general. Accurate differential diagnosis of the various conditions that may cause academic difficulty is necessary so that psychologists can offer the most appropriate and effective interventions. It is also important to be aware of and address the emotional distress that can be a consequence of the academic difficulties experienced by students with LD.

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