

# **Examination of Extended Time Use Among Postsecondary Students with Non-Apparent Disabilities**

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## **Abstract**

The study investigated the amount of extended time (ET) used by postsecondary students with learning disabilities, attention-deficit/hyperactivity disorder (ADHD), and psychological disorders granted a 50% ET accommodation (i.e., time and one-half). Extended time used was evaluated by disability type, including comorbid presentations, and year in school. The sample was composed of 2,227 undergraduate course tests taken with ET. ADHD was the most common disability, and the majority of tests (75%) were taken by upperclassmen. The average amount of time used on tests taken with ET was well below the amount granted, and no pattern emerged to suggest a connection between disability type and amount of time used. Further, tests taken by individuals with multiple disabilities generally did not require greater amounts of ET than tests taken by individuals with single disabilities. Implications and recommendations regarding disability service access and ET as an accommodation are discussed.

*Keywords: extended time, accommodation, postsecondary, learning disabilities, ADHD*

Approximately 19% of undergraduate students attending U.S. postsecondary institutions have a disability (U.S. Department of Education National Center for Education Statistics, 2019). Those with specific learning disabilities (LD), attention-deficit/hyperactivity disorder (ADHD), and/or psychological (Psych) disorders (e.g., anxiety, depression) account for the largest proportion of this group (Raue & Lewis, 2011). Students with these disabilities, sometimes called “non-apparent” because their symptoms and impairments are not readily observable in most situations, are served under the auspices of the Americans with Disabilities Act (ADA; Americans with Disabilities Act Amendments Act, 2008). The ADA requires, in part, that institutions provide reasonable accommodations to best ensure that students with disabilities (SWDs) have equal opportunity to demonstrate their knowledge on examinations. Extended time (ET) on tests, an accommodation granted to offset impaired academic fluency and speed-related deficits, is the accommodation most commonly

requested by and granted to postsecondary students (Newman et al., 2011). Recently, evidence has indicated that ET durations granted often have little relation to the amount of time actually used (Holmes & Silvestri, 2019; Spenceley & Wheeler, 2016). In the current study, the amount of ET used during tests taken by students with non-apparent disabilities (LD, ADHD, and/or Psych) was investigated as a function of disability type and year in school, with the goal of informing future ET recommendations.

## **Extended Time**

Testing accommodations are “alterations to tests’ standard administration procedures that are made to overcome individuals’ functional impairments, in order to increase the validity of inferences that can be made from the resulting scores” (Kettler, 2012, p. 53). Extended time on tests is an accommodation commonly granted to students with disabling conditions that hinder the efficiency at which they access a test, compromising their ability to demonstrate

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knowledge or skills within the standard allotted time (Lovett & Lewandowski, 2015). Theoretically, ET should allow SWDs equal access to test content, resulting in improved test scores. As posited by the interaction hypothesis and maximum potential thesis, students without disabilities should not benefit from ET, already having sufficient test access under standard conditions (Sireci et al., 2005; Zuriff, 2000). Alternatively, the differential boost theory posits that students without disabilities might experience some benefit from ET, but the benefit would be significantly less than that experienced by SWDs (Fuchs & Fuchs, 2001). Interestingly, research has not consistently supported any of the noted theories. For example, some studies have found that college students with ADHD or LD provided ET are able to access more items than students without disabilities allotted only standard time, yet students without disabilities actually benefit more from ET than students with ADHD or LD when both are granted ET (Lewandowski, Cohen, & Lovett, 2013; Miller et al., 2015). In the context of the notable flaws of ET as an accommodation, surprisingly little attention has been paid to the amounts of ET that would minimize resulting unfairness.

Extended time is frequently provided in amounts of 50% (time and one-half; e.g., 90 min for a 60 min test) or 100% (double time; e.g., 120 min for a 60 min test) extra time. Historically, 50% has been the default duration when granting an ET accommodation, but this practice has been criticized for a lack of empirical support (see Sokal & Vermette, 2017). Other findings suggest that 25% ET is a more appropriate allotment, as it balances access and fairness. Cahalan-Laitusis et al. (2006) found that students with LD and/or ADHD taking the SAT with 50% ET tended to use less than 25% ET. Similarly, Lewandowski, Cohen, and Lovett's (2013) findings suggested that college students with LD may require additional time on speeded tests, but that "25% extra time may suffice for the typical LD student, 50% extra would be more than what some students require, and 100% extra time would confer an unfair advantage for some students with LD" (pp. 333-334). Despite these findings, the use of 25% ET is quite rare (Weis et al., 2019).

### **Predicting Extended Time Need and Appropriate Duration**

Little empirical evidence exists to inform ET need and duration recommendations. Research with college students with LD has indicated that some measures of academic fluency may have utility in predicting the likelihood of improvement when granted ET, but correlations between the measures and a dichotomous "need ET/does not need ET" variable have been mod-

est, at best (e.g., -.38; Ofiesh et al., 2005). Findings for the predictive utility of cognitive processing speed scores were inconsistent in two previous studies (Ofiesh, 2000; Ofiesh et al., 2005). More recently, Lovett and Bizub (2019) found that none of six cognitive diagnostic performance tests significantly predicted access to items on a timed multiple-choice reading comprehension test. In general, authors of such studies have concluded that test scores represent only one of many variables to be considered when determining ET durations. The conclusion that test scores alone are insufficient is generally accepted due to the lack of empirical evidence demonstrating the association between diagnostic and real-world tests.

Despite the recognized importance of basing accommodations on functional limitations instead of diagnostic label (Gordon et al., 2002), it is not surprising that some professionals appear to base ET recommendations on the mere presence of a diagnosis given the paucity of effective predictors of a need for ET. For example, reviews of documentation submitted to disability services offices in support of accommodation requests indicate that it is common for ET to be recommended for students diagnosed with ADHD in the absence of evidence supporting need (Nelson et al., 2014; Weis et al., 2019).

### **Importance of the Study**

In the current study, the amount of ET used by college students was investigated to determine if the ET granted provided them with sufficient time, too little time, or more time than they required to complete tests. The amount of ET used during tests warrants scrutiny due to the potential consequences associated with students being provided too little or too much time. Students with disabilities who are not granted a commensurate amount of time to access a test when compared to students without disabilities experience discrimination. On the other hand, evidence indicates that SWDs granted too much ET outperform students without ET (Lewandowski, Cohen, & Lovett, 2013), and that use of ET by SWDs results in scores that over-predict later academic performance (Cahalan et al., 2002; Thornton et al., 2002). Ultimately, ET is an accommodation that breaks a standard procedure, with potential to compromise the comparability of scores across test-takers when not allotted appropriately. When considered within the context of concerns from faculty that accommodations are compromising fairness (Pardy, 2016; Trachtenberg, 2016), findings that evaluators—acting in more of an advocacy role than an objective role—are recommending accommodations too liberally (Harrison et al., 2013), and a clear desire for ET by students regardless of disability

status (Lewandowski, Cohen, & Lovett, 2013), more precision is needed when determining who should have ET and how much time should be granted.

### Review of the Relevant Literature

Much of the previous research on ET has been conducted using analogue designs (see Lovett & Lewandowski, 2015 for a review). A limitation to these studies, however, is that they were conducted in simulated test settings in the absence of any external motivation to perform well. Participants in research studies have been found to sometimes put forth sub-optimal effort, given the low stakes (An et al., 2017). The current study examined use of ET in an authentic setting in which test scores counted toward course grades, significantly augmenting the ecological validity of the findings. As a result, students' effort and motivation were also authentic, allowing a clearer depiction of ET *need* versus *want*.

Three prior investigations have evaluated the use of ET by SWDs in a similar fashion. Holmes and Silvestri (2019) examined the amount of ET used by students with LD granted 50% ET, using ADHD and mental illness (e.g., anxiety, depression) groups as clinical comparisons. Findings indicated that over two-thirds of tests completed by students with LD, ADHD, or mental illness were completed within the time given in the classroom.

Spenceley and Wheeler (2016) examined the amount of ET used by students with varying disabilities, including cognitive, sensory, physical, and medical disorders. Of tests taken with 50% ET by students with LD or ADHD, large percentages (66% and 58%, respectively) were completed within standard time. For students with Psych disorders, 39% of tests were completed within standard time. Of tests taken by students with LD with 100% ET, 61% were completed within standard time, and over 80% were finished within 50% ET. Of tests taken by students with ADHD and Psych disabilities, 36% and 43% were completed within the standard time, respectively. Seventy percent for both groups were completed within 50% ET.

Sokal and Vermette (2017) also examined the amount of ET used by students, but did not break down the findings by disability type or amount of ET granted. Within their findings, 36% of tests were completed within the standard time provided in the classroom, and 84% of tests were completed with less than 50% ET. The authors also evaluated the use of ET as it related to course level. Students used more time on tests for third-level courses relative to first-level courses, and maintained the increase between year three and year four.

Overall, the studies suggested that the majority of students with ADHD, LD, or Psych disorders who are granted ET do not use the full amount of time allotted, and frequently use no ET at all. Authors concluded that smaller increments of ET (e.g., 25%) should be considered to ensure equal access to SWDs while maintaining fairness to those not receiving ET (Holmes & Silvestri, 2019; Spenceley & Wheeler, 2016).

### Current Study

In the current study, the amount of ET used during tests taken by college students with LD, ADHD, and/or Psych was investigated with the objective of determining if the amounts of ET granted were sufficient for students to fully access their tests or if it was common that too little or even too much time was granted. The focus of the study was test completion, as it implies full access to a test, and not test outcome, as accommodations are intended to be outcome neutral. Whereas much has been learned about ET use over the past few years, several issues remain unaddressed. First, the use of ET by students with comorbid cognitive and psychiatric conditions has yet to be evaluated. Spenceley and Wheeler (2016) included a multiple disabilities group, but the disabilities included physical and sensory disorders in addition to cognitive and psychiatric disorders. Investigating comorbid cognitive and psychiatric disorders is warranted due to the common comorbidities among the disorders of interest (Anastopoulos et al., 2018; Kessler et al., 2006) and the potential for an incremental increase in functional impact (Angold et al., 1999). Whereas it would seem intuitive that experiencing symptoms associated with multiple disorders would result in a need for greater time than those with single disabilities, this question has not been evaluated empirically. Second, the impact of course level has only been evaluated broadly, with findings reported for SWDs as a whole (Sokal & Vermette, 2017). Based on their findings that students used more ET as they advanced in college, Sokal and Vermette speculated that there could be a positive correlation between increasing course levels and difficulty of exams, which in turn might result in the need for additional time used to complete exams. Further examination into how year in school impacts time used to complete exams is warranted. Additionally, the impact of the potential interaction between year in school and disability type on time used to complete exams remains undetermined.

The current study attempted to replicate and extend the findings of Holmes and Silvestri (2019), Spenceley and Wheeler (2016), and Sokal and Vermette (2017). The use of ET by students with ADHD,



LD, and Psych disorders that were granted a 50% ET accommodation was investigated. Unlike previous investigations, groups with multiple disorders were included to examine the potential confounding effect on ET used. Additionally, ET use was evaluated for each disability group as a function of year in school. The specific research questions were as follows:

1. Of tests taken with ET, what is the distribution of disability type and year in school?
2. Of the ET allotted for tests, how much is used? Does the amount of ET used vary by disability type or year in school?
3. Does the ET used by students with comorbid disorders exceed the ET used by students with only one disorder?

## Method

### Sample

The sample was composed of 2,227 tests taken with 50% ET by students who came to a university disability services office during the spring semester of 2018. The tests included midterms, but not final exams due to a university-prescribed duration for finals that may not match actual exam length. Only undergraduate course tests taken by undergraduate students were included. Tests for which the standard time allotted was < 30 min were removed, as were tests on which students worked for < 10 min. The standard time for the remaining tests ranged from 30 to 210 min ( $M = 72.79$ ,  $SD = 29.11$ ). All tests administered with ET occurred in a low-distraction environment ( $\leq 8$  students; 93%) or private room (7%). Use of stop-the-clock breaks was the next most common accommodation (11%). Use of other accommodations (e.g., access to a word processor, speech-to-text technology) was relatively infrequent ( $\leq 3\%$  of tests per accommodation).

The dataset used for the study did not include case numbers, precluding determination of the exact number of students who took the tests. Although the variables of interest related to the tests themselves, and not to students, it was important to ensure that the tests were not all taken by a small number of students. To address this issue, the number of students was estimated using the available categorical variables (e.g., year in school, major, primary and secondary disability type) to identify all possible unique multivariate groups. The resulting number was 475, with each unique group associated with an average of 4.69 tests ( $SD = 3.36$ ). Whereas it remained possible that the number of unique groups did not represent the precise number of students, the method used established the

minimum number of students taking the tests. As a result, the number of students taking the tests in the total sample, as well as in each disability group, was at least as large as the sample sizes reported. Because a greater number of students would only improve the representativeness of the sample, the approach was deemed appropriate.

For the students taking the tests, eligibility for disability services and diagnostic classifications were determined by a team of three disability service professionals (DSPs) who reviewed submitted documentation against guidelines established by the governing university system (University System of Georgia, 2015). The guidelines for the LD category (estimated  $n \geq 77$  students,  $M = 4.38$  tests,  $SD = 3.42$ ) required a diagnosis from a qualified evaluator, an educational history consistent with LD, substantially limited (i.e., standard score < 90) academic achievement skills (e.g., reading decoding, fluency, and/or comprehension), and a cognitive/linguistic processing deficit meaningfully associated with the identified academic limitation. The guidelines for the ADHD category (estimated  $n \geq 165$ ,  $M = 5.34$  tests,  $SD = 3.48$ ) required a diagnosis of ADHD based on criteria from the *Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition, Text Revision (DSM-IV-TR; American Psychiatric Association [APA], 2000)* or - *Fifth Edition (DSM-5; APA, 2013)* depending on when the diagnosis was made, evidence of clinically significant inattention and/or hyperactivity-impulsivity symptoms prior to the age of 12 and currently, corroboration of self-reported symptoms by an independent informant, and evidence of significant functional impairment in the academic setting. The guidelines for the Psych category (estimated  $n \geq 62$ ,  $M = 4.19$  tests,  $SD = 3.13$ ) required a diagnosis based on *DSM-IV-TR* or *DSM-5* criteria, a description of history, current symptoms, and severity of the disorder, and evidence of significant functional impairment in the academic setting. In all cases, diagnoses and impairment were required to have been determined or reconfirmed within the previous three years. In the case of comorbid disorders, the guidelines for all disorders were considered (LD/ADHD estimated  $n \geq 55$ ,  $M = 4.05$  tests,  $SD = 3.18$ ; LD/Psych estimated  $n \geq 17$ ,  $M = 4.59$  tests,  $SD = 2.29$ ; ADHD/Psych estimated  $n \geq 85$ ,  $M = 4.62$  tests,  $SD = 3.43$ ; LD/ADHD/Psych estimated  $n \geq 14$ ,  $M = 3.93$  tests,  $SD = 3.36$ ). Eligibility for the ET accommodation was determined by a DSP via an interactive process with the student while considering available documentation, history of accommodation usage, and current functional limitations. Tests taken by individuals with any type of cognitive, linguistic, developmental, or physical disability beyond

LD, ADHD, and/or Psych disorders (e.g., depression, anxiety) were excluded.

Of the ADHD diagnoses represented in all groups (e.g., ADHD and comorbid groups), most were inattentive (44.85%) or unspecified (29.19%) types. Of the LD diagnoses represented in all groups, reading disorder was most frequent (34.30%), followed by LD diagnoses impacting multiple achievement areas (e.g., reading and math; 29.97%). Of the Psych disorders represented in all groups, anxiety disorder was the most frequent (48.22%), followed by comorbid Psych disorders (36.39%). Year in school was based on credit hours earned. The variable was reduced to two levels (i.e., underclassmen, upperclassmen) to address small sample size, reduce the number of statistical comparisons, and allow more parsimonious interpretation.

### Procedure

The study was authorized by the institutional review board of the researchers' university and conducted in a manner consistent with its principles. Data were collected from archival records stored by the disability services office at a large research university in the southeast United States. Variables were coded for each test administered as a part of standard procedure for the monitoring of tests administered at the site. Variables included disability type, year in school, major, standard time allotted for the test, ET allotted for the test, time used to complete the test, and other accommodations used. Time used to complete a test was determined using the barcode scanning function of test management software that recorded the precise times when a student was seated for the test and when the student turned in the test. As in previous studies (Sokal & Vermette, 2017), the ET variable was calculated by dividing the time used to complete the test by the standard time allotted for the test.

### Analyses

The distributions of tests across disability type and year in school were analyzed using chi-square and logistic regression. The amount of ET used was evaluated by disability type and year in school using two-way analysis of variance (ANOVA) and post hoc comparisons. Cohen's *d* was calculated to estimate effect size where appropriate, with .2, .5, and .8 indicative of small, medium, and large effect sizes, respectively (Cohen, 1992). Finally, because ET is granted in intervals, most commonly 50% of standard time, the percentages of tests completed within increments of ET were analyzed using descriptive statistics. As in Spenceley and Wheeler (2016), a categorical variable was created to specify the increments of ET, in-

cluding standard %, 1 – 25%, 26 – 50%, and >50%. Percentages of tests completed within each interval were calculated as a function of disability type and class level.

## Results

### Distribution of Disability Category and Year in School

Table 1 reports the distribution of tests taken with ET by disability category and year in school. Significantly more tests were taken by upperclassmen (75.4%) than by underclassmen (24.6%),  $\chi^2 (1) = 574.39, p < .001$ . The distribution of disability categories was not equal,  $\chi^2 (6) = 1452.53, p < .001$ . To evaluate relative sizes, 21 pairwise chi-square comparisons were conducted, with alpha set to .002 (.05/21) to minimize the chance of Type I error. Findings revealed that ADHD was the largest group, followed by ADHD/Psych and LD (equivalent), Psych and LD/ADHD (equivalent), and LD/Psych and LD/ADHD/Psych (equivalent).

To evaluate the distribution of disability category as a function of year in school, logistic regression was used to predict year in school from disability category. The omnibus analysis was significant,  $\chi^2 (6) = 31.87, p < .001$ , indicating statistically significant differences in the percentages of tests in each disability group by year in school. With alpha set at .007 (.05/7), post hoc comparisons indicated a significantly higher percentage of upperclassmen in the Psych group relative to the ADHD/Psych group, ADHD group, and the LD/ADHD group.

### Time Used to Complete Tests as a Function of Disability and Year in School

In the next analyses, the time used to complete tests was evaluated by disability category and year in school when 50% ET was granted. The findings are reported in Table 2. Tests completed used 14% ET ( $SD = .41$ ) on average. A two-way ANOVA with disability category, year in school, and their interaction as independent variables was conducted. Analysis of the assumptions associated with two-way ANOVA revealed that the data did not pass Levene's test of homogeneity of variance,  $W(13, 2213) = 2.13, p = .01$ . As a result, the weighted least squares approach was used to adjust for the heterogeneity of variance in the different groups of test-takers (Kutner et al., 2005). The approach weights each point by one over the variance of the outcomes in the class level/disability group. The weighting allowed groups with greater variance to be treated as providing less precise information about the average outcome. The weight-

**Table 1***Distribution of Tests Taken with 50% Extended Time by Disability and Year in School*

Disability	Underclassmen		Upperclassmen		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
ADHD	240	27	641	73 <sub>b</sub>	881 <sup>a</sup>	40
ADHD/Psych	104	26	289	74 <sub>b</sub>	393 <sup>b</sup>	18
LD	67	20	270	80 <sub>ab</sub>	337 <sup>b</sup>	15
Psych	35	13	225	87 <sub>a</sub>	260 <sup>c</sup>	12
LD/ADHD	66	30	157	70 <sub>b</sub>	223 <sup>c</sup>	10
LD/Psych	23	29	55	71 <sub>ab</sub>	78 <sup>d</sup>	4
LD/ADHD/Psych	13	24	42	76 <sub>ab</sub>	55 <sup>d</sup>	2
Total Tests	548	25	1,679	75*	2,227	100

*Note.* ADHD = Attention-Deficit/Hyperactivity Disorder, Psych = Psychiatric Disorder, LD = Learning Disability. Underclassmen and upperclassmen percentages sum across rows; total percentages sum down the column. Total *n* column superscripts refer to the distribution of disability categories. Proportions sharing a common superscript are not statistically different at  $\alpha = .002$  (.05/21). Upperclassmen % column subscripts refer to the distribution of disability categories as a function of year in school. Proportions sharing a common subscript are not statistically different at  $\alpha = .007$  (.05/7).

\* The proportion of tests taken by upperclassmen was significantly greater than the proportion taken by underclassmen at the .05 level.

ed least squares approach does not change summary statistics or residuals, but standard errors are adjusted. Weights for the observations from each group are available upon request from the first author.

Results of the two-way weighted least squares ANOVA indicated that the interaction between disability category and year in school was not significant,  $F(6, 2213) = 0.530$ ,  $p = .786$ . Significant group differences were identified for year in school,  $F(1, 2213) = 5.496$ ,  $p = .019$ , indicating that upperclassmen took significantly more time to complete tests than underclassmen; however, the effect size was small ( $d = .12$ ). The ANOVA for disability was also significant,  $F(6, 2213) = 9.712$ ,  $p < .001$ . Bonferroni-adjusted post hoc comparisons (.05/21 = .002) indicated that the LD/ADHD/Psych group required significantly less time than all other groups except the LD/Psych group. Effects sizes were large for comparisons with the ADHD and LD/ADHD groups (both  $d = .84$ ) and medium with the ADHD/Psych ( $d = .66$ ), LD ( $d = .48$ ), and Psych ( $d = .61$ ) groups. The LD group also required significantly less time than the ADHD and LD/ADHD groups, though effect sizes were small ( $d \leq .34$ ).

### Percentages of Tests Completed Within Increments of Standard Time

In the next analyses, the percentages of tests completed within increments of ET when 50% ET was allotted were analyzed. The findings are reported in Table 3. Of all tests taken with 50% ET, 37.27% were completed within standard time and 54.87% were completed within 25% ET. Over 22% of tests were completed using more than 50% ET.

The percentage of tests completed within standard time by disability ranged from 31.90 (ADHD) to 47.77 (LD). The exception was for the LD/ADHD/Psych group, for which 67.27% of tests were completed within standard time. Cumulatively, the percentage of tests completed within 25% ET ranged from 48.02 (ADHD) to 66.76 (LD), with the LD/ADHD/Psych group again as an exception (80%). The percentage of tests completed using >50% ET was substantial for all but the LD/ADHD/Psych group (1.82%). Of all tests taken with 50% ET, the percentages of tests completed by underclassmen relative to upperclassmen during standard time was separated by just 4.06 percentage points (40.33% for underclassmen and 36.27% for upperclassmen) and were virtually

**Table 2***Mean Time Used/Standard Time for Tests Taken with 50% Extended Time by Disability and Year in School*

Disability	Underclassmen		Upperclassmen		Total	
	<i>n</i>	<i>M</i> ( <i>SD</i> )	<i>n</i>	<i>M</i> ( <i>SD</i> )	<i>n</i>	<i>M</i> ( <i>SD</i> )
ADHD	240	1.15 (0.44)	641	1.21 (0.38)	881	1.19 <sup>c</sup> (0.40)
ADHD/Psych	104	1.05 (0.41)	289	1.16 (0.41)	393	1.13 <sup>bc</sup> (0.41)
LD	67	1.05 (0.41)	270	1.06 (0.39)	337	1.06 <sup>b</sup> (0.40)
Psych	35	1.09 (0.39)	225	1.12 (0.41)	260	1.11 <sup>bc</sup> (0.41)
LD/ADHD	66	1.18 (0.46)	157	1.20 (0.40)	223	1.20 <sup>c</sup> (0.42)
LD/Psych	23	0.98 (0.34)	55	1.11 (0.40)	78	1.07 <sup>abc</sup> (0.38)
LD/ADHD/Psych	13	0.83 (0.26)	42	0.89 (0.36)	55	0.88 <sup>a</sup> (0.34)
Average	548	1.10 (0.43)	1679	1.15* (0.40)	2227	1.14 (0.41)

Note. ADHD = Attention-Deficit/Hyperactivity Disorder, Psych = Psychiatric Disorder, LD = Learning Disability. Total *M*(*SD*) column superscripts refer to post hoc mean comparisons for disability category. Means sharing a common superscript are not statistically different at  $\alpha = .002$  (.05/21).

\* The difference between time used/standard time for underclassmen and upperclassmen was significant at the .05 level.

identical for tests completed within 25% ET and >50% ET.

### Discussion

The purpose of the current investigation was to evaluate the use of the ET accommodation at the postsecondary level. Specifically, the authors sought to determine the number of tests taken with 50% ET and the amount of ET used during those test administrations, with both variables considered in relation to disability type and year in school.

#### Distribution of Disability Category and Year in School

ADHD was the most common disability type, followed by ADHD/Psych and LD. These findings were only slightly different from those of Spenceley and Wheeler (2016), who found LD to be the most com-

mon category, followed by ADHD. Regarding year in school, the vast majority of tests (75%) were taken by upperclassmen (as classified by credits earned) in the current study. Additional analyses revealed that only 3.46% of the 2,227 total tests were taken by first-year students. Whereas the current study was not designed to investigate the proportion of eligible students who used the ET accommodation and a number of varied reasons could account for this low percentage, the finding was surprisingly low and is worthy of further investigation.

#### Time Used to Complete Tests as a Function of Disability and Year in School

Consistent with previous research (Holmes & Silvestri, 2019; Sokal & Vermette, 2017; Spenceley & Wheeler, 2016), the average amount of time used on tests taken with ET was well below the amount granted. For tests taken with 50% ET, the average ET



**Table 3***Percentage of Tests Completed Within Increments of Test Time Allotted When Granted 50% Extended Time*

Disability	Year	Standard %	1-25%	26-50%	>50%
LD	Underclassmen	47.76	16.42	14.93	20.90
	Upperclassmen	47.78	19.63	16.67	15.93
	Total	47.77	18.99	16.32	16.91
ADHD	Underclassmen	35.42	16.25	20.83	27.50
	Upperclassmen	30.58	16.07	26.99	26.37
	Total	31.90	16.12	25.31	26.67
Psych	Underclassmen	34.29	40.00	11.43	14.29
	Upperclassmen	36.89	21.33	21.78	20.00
	Total	36.54	23.85	20.38	19.23
LD/ADHD	Underclassmen	36.36	13.64	22.73	27.27
	Upperclassmen	31.85	18.47	24.84	24.84
	Total	33.18	17.04	24.22	25.56
LD/Psych	Underclassmen	56.52	17.39	17.39	8.70
	Upperclassmen	40.00	18.18	21.82	20.00
	Total	44.87	17.95	20.51	16.67
ADHD/Psych	Underclassmen	42.31	18.27	19.23	20.19
	Upperclassmen	35.64	15.92	23.18	25.26
	Total	37.40	16.54	22.14	23.92
LD/ADHD/Psych	Underclassmen	84.62	0.00	15.38	0.00
	Upperclassmen	61.90	16.67	19.05	2.38
	Total	67.27	12.73	18.18	1.82
Total	Underclassmen	40.33	17.52	19.16	22.99
	Upperclassmen	36.27	17.63	23.41	22.69
	Total	37.27	17.60	22.36	22.77

*Note.* ADHD = Attention-Deficit/Hyperactivity Disorder, Psych = Psychiatric Disorder, LD = Learning Disability.



used was 14%, a finding consistent with that of Sokal and Vermette (17%; 2017), as well as with analogue studies investigating the time required for SWDs to access a similar number of items as controls (4-14%, Cahalan-Latusis et al., 2006; 14%, Spenceley et al., 2020). The findings also aligned with previous studies (Holmes & Silvestri, 2019; Spenceley & Wheeler, 2016) in that notable percentages of students used more than the ET allotted to them. In all, the evidence suggested that too much ET is often granted, students sometimes use more ET than they are allotted, and current methods for determining the amount of ET required to access a test are inadequate.

Additionally, no consistent pattern emerged to suggest a connection between disability type and amount of time used. First, despite some statistically significant differences in the amounts of test time used, the majority of effect sizes were small (Cohen, 1992), and the only large effects occurred when comparing disability categories with the category with the lowest mean time used (i.e., LD/ADHD/Psych). Second, a rank ordering of the disability categories by the mean amount of time used suggested no discernable pattern. When ranked from most to least time used when granted 50% ET, ADHD was associated with the first, second, and third positions (i.e., LD/ADHD, ADHD, ADHD/Psych); however, it was also associated with the least time used (i.e., LD/ADHD/Psych). Third, within each disability category, the range of time used was quite large. For tests taken with 50% ET, the percentage of time used ranged from an average low of 20% of *standard time* to an average high of over double time (104%).

The large range of ET used was further evident in the findings conducted using ET as a categorical variable. In the results, it was common for tests taken with ET to be completed within the standard time or with only a fraction of allotted ET. Of all tests taken with 50% ET, 37% were completed within standard time, and 55% were completed within 25% ET. Previous investigations have revealed similar findings, though often demonstrating need for even less ET (Holmes & Silvestri, 2019; Spenceley & Wheeler, 2016).

Finally, previous research has found that upper-classmen generally use more time on tests than underclassmen (Sokal & Vermette, 2017). The findings in the present study revealed the same pattern, though the effect size was small and unconvincing ( $d = .12$ ). As a result, it remains unclear if year in school is associated with increasing exam difficulty and therefore need for more ET, as speculated by Sokal and Vermette.

## Extended Time Used by Students with Comorbid Disorders

The findings suggested that individuals with multiple non-apparent disabilities generally do not require greater amounts of ET than individuals with single disabilities. When ranking categories by ET used from most to least, comorbid presentations were ranked one, three, five, and seven. To the authors' knowledge, no previous studies have investigated the impact of multiple non-apparent conditions on the use of ET; however, individuals with multiple disabilities, including comorbid manifestations of cognitive, psychological, physical, visual, and medical conditions, used the most time when granted 100% ET in one previous study (Spenceley & Wheeler, 2016), though they also required less than standard time when granted 50% ET.

## Limitations

The study findings must be considered within the context of several limitations. First, whereas the overall sample size was large, it was drawn from tests administered during one semester at a single, large university, limiting generalizability. Second, the numbers of students comprising the LD/Psych and LD/ADHD/Psych groups were relatively small (estimated  $n \geq 17$  and 14, respectively), and associated findings should be interpreted with caution. For example, the mean time used for tests administered with 50% ET was surprisingly low for the LD/ADHD/Psych group, an anomaly potentially due to the small sample size. Third, tests were not limited to a specific subject or response format, precluding specific recommendations related to those variables. Fourth, all tests were administered with ET in a reduced distraction environment (rooms with  $\leq 8$  students) or private room. As a result, the effects of an alternative testing environment on use of ET could not be uncoupled. Finally, the investigation did not incorporate a control group, preventing comparisons with tests taken under standard conditions.

## Implications and Recommendations

### *Appropriateness of the ET Durations Provided*

In the current study, the amounts of ET granted often seemed to have little relation to the amounts of ET students actually needed to access tests. Historically, there has been little empirical evidence to inform how much ET would allow SWDs to attempt a similar number of items as students without disabilities, a scenario that would suggest equal access. Though the number of items attempted by students without disabilities on these tests were not determined, 55% of the tests in this study were completed within 25%

ET, indicating access to the entirety of the test. As such, the findings suggest that a smaller amount of ET, such as 25%, would be sufficient for full access on most tests taken by students with non-apparent disabilities in the absence of a clearly severe condition. These findings converge with those of other studies which have concluded that 25% ET would provide equal access for all test-takers, including ET investigations of reading comprehension and college LD (Lewandowski, Cohen, & Lovett, 2013); the SAT and high school LD and ADHD (Cahalan-Laitusis et al., 2006); and course tests and college LD, ADHD, and Psych (Holmes & Silvestri, 2019; Spenceley & Wheeler, 2016). As a result, offices of disability services have accumulating research to support the use of 25% ET as an evidence-based practice when deemed appropriate. Recognizing that 25% ET is sufficient in a large portion of cases, DSPs could also consider tracking ET duration use and working with students to systematically reduce reliance on unnecessary ET (Slaughter et al., 2020). For instance, Sokal and Vermette (2017) recommended that DSPs meet annually with students to reevaluate the need for ET.

### ***The Role of Disability Type When Determining ET Need***

The findings indicated that, in the absence of more informative data, it would be ill-advised to use a diagnostic label—or the number of diagnostic labels—to estimate the amount of ET an individual might require for equal access to a test. As noted in the *DSM-5*, “impairments, abilities, and disabilities vary widely within each diagnostic category” (APA, 2013, p. 25). It is for these reasons that ADA regulations require that accommodation requests be considered on a case-by-case basis (Nondiscrimination on the basis of disability by state and local governments, 2016). It is notable that there have been recommended practices proposed that associate a diagnosis with an automatic ET accommodation (see Colker et al., 2015). The findings suggest that a diagnosis itself is insufficient to substantiate a need for ET or inform a needed ET duration. As a result, accommodations should be determined via a case-by-case analysis of the severity of an individual’s limitations and interactions with the non-essential demands of the test.

DSPs should follow recommended practices for determining ET duration, which include evaluation of measures of academic fluency (e.g., timed tests of reading comprehension), consideration of the rate of completion of other academic tasks, and consultation with those who have observed the student’s test-taking behavior (Lovett & Lewandowski, 2015). The amounts of ET granted to SWDs likely would have

greater precision if more emphasis was placed on evidence of impairment relative to most people in the general population than on diagnoses, which are frequently based on symptoms in the absence of impairment (e.g., Sparks & Lovett, 2013; Weis et al., 2019).

### ***Use of ET in First-Year Students***

The finding that only three percent of tests taken with ET were taken by first-year students (based on credits earned) was striking. A number of benign factors could account for this finding. For example, some students begin their postsecondary education having already earned some college credits. Because the classification was based on credits earned, some portion of students in their first year on campus may have been classified as second-year students. Additionally, it could be that first-year students simply take fewer tests than other students, the test formats are less complex (e.g., multiple choice versus a combination of multiple choice, application, and constructed response), or instructors of first-year courses are more lenient with the time allotted for tests.

It is also possible, however, that factors significant to DSPs played a role. First-year students eligible for disability services may have a lack of knowledge regarding how to access services, perceive a hostile campus climate, or have a desire to be free of the disability label, all of which have been found in previous studies (Lightner et al., 2012; Slaughter et al., 2020). Each of these would be concerning and relevant to DSPs. In all, the findings suggest the possibility that first-year students may under-utilize disability services. Given that appropriate supports and accommodations have been shown to be related to postsecondary academic success for SWDs (Lightner et al., 2012), DSPs are encouraged to employ proactive outreach to first-year students and increase collaboration between secondary transition teams and postsecondary institutions.

### ***Further Study***

The findings suggested several areas for future research. First, it would be informative to investigate how students are using ET. For example, students with ADHD have been found to be similar in test-taking speed when compared to those without disabilities in analogue studies (Lewandowski, Gathje, et al., 2013), yet ADHD was the disability most frequently associated with ET use in the current study. It is possible that—given the real stakes of the tests in the current study—students delayed leaving to wrestle with indecisiveness, check work, or hope that some answers might come to them even though they had responded to all test items. Such occurrences would be

unlikely in analogue studies. It remains unclear, then, how the time was being used and whether it was necessary or beneficial. Second, research suggests that faculty generally are willing to provide accommodations (Murray et al., 2008); however, the frequency that they consider constructs such as test-taking speed when developing tests has not been evaluated, nor has the degree to which they perceive accommodations as compromising assessment of those constructs. Third, future similar studies are encouraged to investigate the number of SWDs who decline to use their ET, instead taking tests with classmates. Fourth, findings revealed that a substantial number of tests were completed after the granted ET expired. This finding is consistent with those of previous studies (Holmes & Silvestre, 2019; Spenceley & Wheeler, 2016), suggesting the occurrence may not be unusual. Further investigation into the frequency, causes, and ramifications of allowing students more ET than they are granted is needed. Fifth, further investigation into why only three percent of tests administered with ET were taken by first year students would be useful. Finally, ET will likely remain a frequently used accommodation for the foreseeable future. The extant research on predictors of ET need is meager (Ofiesh, 2000; Ofiesh et al., 2005), and studies are needed to identify additional variables and methods to enhance ability to predict how much ET is needed to provide equal access for SWDs.

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