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Provision of Extended Assessment Time in Post-secondary Settings: a Review of the Literature and Proposed Guidelines for Practice

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Abstract
Although extended time for tests and examinations is the most commonly requested and provided accommodation in post-secondary institutions, best practice guidelines from existing research are rarely translated into practice. Thus, a review of the literature was undertaken to examine support for granting additional assessment time to persons in specific disability categories. Based on this review, no more than 25% additional time is supported for students with learning disabilities, and even then, only when their documented area of functional impairment overlaps with assessment task requirements. No research support exists for the provision of extra time for students with attention deficit/hyperactivity disorder (AD/HD) or mental health diagnoses. Research is silent on the appropriateness of additional assessment time for individuals with autism spectrum disorder and thus individuals need to be considered on a case-by-case basis. In very exceptional situations, more than 25% additional time may be warranted, but this would need to be well considered using an established decision-making model.

Keywords Disability · Accommodations · Postsecondary · Functional impairment · Speed · Extra time

Academic accommodations are assumed to provide students with disabilities equal access to the curriculum by removing barriers to participation. Although available accommodations differ across post-secondary institutions and depend on the individual's disability characteristics, testing accommodations are especially common (Lindstrom, 2007), with access to extra time for tests and examinations the most common accommodation provided for students with a variety of mental and physical disabilities (Ballard & Elwork, 2003; Lovett, 2010; Sireci et al., 2005; Sokal & Wilson, 2017; Stretch & Osborne, 2005; Weis et al., 2016; Zuriff, 2000). The theoretical purpose of extended time accommodations is to reduce the impact of construct-irrelevant skills, such as reading speed or academic fluency, from negatively affecting the student's ability to access test content when compared with their non-disabled peers (Fuchs & Fuchs, 2001).

However, numerous researchers have expressed concerns regarding the provision of extended time accommodations. Quite apart from the recent reports showing how easily students can feign slow reading speed in order to benefit from extra time accommodations (e.g., Belkin et al., 2019; Hurtubise et al., 2017), and that criteria used by clinicians to diagnose invisible disorders often include identifying individuals with no normative impairments (Goegan & Harrison, 2017), concerns have been raised that extended time accommodations may be given to students too readily, without fully considering the effects of the additional time on the validity of obtained test scores (Jansen et al., 2019; Lovett, 2020; Sokal & Vermette, 2017). In addition, as there is no set criterion for determining when extended time is warranted or how much should be provided, disability service providers and psychologists are often left to use their best judgement (Lovett, 2011). After reviewing the existing literature, Golan et al. (2020) assert that no empirical or theoretical justification exists for providing 50% extra test-taking time to students with disabilities. Despite this, surveys conducted in both the USA and Canada have documented that 50% additional time is the most common duration of time extension recommended and provided (Sokal & Wilson, 2017; Weis et al., 2016). By contrast, the basic amount of extra time provided for students with specific learning disabilities in both the UK and Israel is 25% (Golan et al., 2020;

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Kozma, 2016), and between 9 and 16% in countries like Australia (Australian Disability Clearinghouse on Education & Training, 2022; Parkyn, 2008; Victoria Curriculum & Assessment Authority, 2021).

Giving students different amounts of time to complete tests can have many negative consequences. The primary issue is one of test validity. Changing the amount of time available to complete a test can fundamentally change the skills or constructs being measured, which in turn changes the predictive validity of the test (Lovett, 2010). Even in non-competitive situations, giving additional time can artificially inflate scores (Fuchs et al., 2000; Furlano et al., 2021), overestimating students' skill levels and preventing a test from measuring the fluency and automaticity of students' skills (Lovett, 2020; Phillips, 2011). This may be especially relevant if, in fact, fluency or automaticity of knowledge or skills is a critical part of the concept being measured, such as might be required in a real-world/occupational setting (Hosterman et al., 2019; Lovett & Bizub, 2019; Pardy, 2016). We know from various studies that scores obtained under conditions of extra time do not have the same predictive validity in assessing an individual's knowledge and skills compared with scores obtained under regular time limits. This, in turn, leads to unfair score comparisons, especially on high-stakes tests where students compete for selective opportunities, such as admission to college or graduate programs (Cahalan et al., 2002; Searcy et al., 2015; Thornton et al., 2002). Standardized admission tests are designed to best predict who will be successful in a certain program or area of study. However, taking such tests in non-standard conditions (i.e., with extra time) has been shown to undermine the predictive validity of these tests. For instance, Cahalan et al. (2002) found that scores obtained on the Scholastic Admissions Test (SAT) under extra time conditions were substantially weaker predictors of first year university performance than were those achieved with no accommodations.

Searcy et al. (2015) showed that the predictive validity of Medical College Admission Test (MCAT) scores taken under extra time conditions was diminished significantly relative to non-accommodated test takers. Controlling for undergraduate GPA and total MCAT score (e.g., scores that should predict equivalent performance in medical school), these researchers found that students who took the MCAT with extra time did less well in medical school, took significantly longer to graduate and a higher overall rate of medical school failure, and had lower rates of passing the medical licensing exams compared with those who received no extra time. This is despite the fact that these students continued to receive accommodations while in medical school. This decrease in predictive validity also resulted in harm to students, due to stress of increased financial burden associated with paying tuition for more years, stress associated with not understanding information as well as their peers, and stress associated with having to rewrite licensing exams or failing to become a doctor after years of study. If the MCAT score no longer predicts who is likely to succeed in medical school then the purpose of the test has been undermined.

The Law School Admissions Council (LSAC) has also evaluated predictive validity of the Law School Admission Test (LSAT) when taken with extra time. Sweeney et al. (2017) compared the law school performance of students who took the LSAT with or without extra time. Although both groups performed equally on the test itself (predicting equivalent performance in law school), the group who received extra time obtained grades in first year law school that were almost half a standard deviation below their non-accommodated peers. These authors also concluded that the LSAT and undergraduate GPAs tended to overpredict performance in students who had received extra time. This most recent finding is similar to previously-reported results from earlier cohorts (e.g., Amodeo et al., 2009; Thornton et al., 2002), all of which suggest that taking the LSAT with extra time results in a score that does not accurately predict actual performance in law school, even when accommodations continue to be provided.

The second issue is one of test fairness. Giving only some students additional time may give these students an unfair advantage over their peers who did not receive extra time. This is an ethical issue (Belkin et al., 2019; Freedman, 2003). A number of recent studies demonstrate clearly that extra test-taking time benefits all test-takers (e.g., Furlano et al., 2021; Lewandowski et al., 2013a) with non-disabled students sometimes enjoying an even greater advantage than those with reading disabilities (Lewandowski et al., 2013a). Individuals who receive extra time to take examinations are able to access more test items than non-accommodated individuals, and obtain significantly higher scores than do unaccommodated test-takers (Furlano et al., 2021; Lewandowski et al., 2013a). This also suggests that individuals who perhaps obtained their disability label by exaggerating deficits during testing would have a distinct advantage on tests where they receive extra time but similarly-able peers were given only standard time. Indeed, one of the main findings of the recent College Admissions Scandal was that students were coached to feign learning problems in order to obtain extra time accommodations on college admissions exams (Escobar & Ahmed, 2019). This was done, in part, for the purpose of improving the test scores of otherwise non-disabled students. In fact, the mastermind behind the scheme explained to one client "Yeah, everywhere around the country. What happened is, all the wealthy families…figured out that if I get my kid tested and they get extended time, they can do better on the test. So most of these kids don't even have issues, but they're getting time. The playing field is not fair." (Escobar & Ahmed, 2019).

This is not to say that extended time for tests and examinations is never an appropriate accommodation. However, before providing extra time one must first demonstrate that the constructs being evaluated do not change with the provision of extra time, and that such an accommodation does not unfairly disadvantage those who take the test under standard conditions (Lovett, 2010). Currently, decisions regarding when and how much extra time to provide appear arbitrary, indiscriminate, and lacking in empirical justification.

Thus, the aim of this document is to review existing research and offer guidelines to help determine when an extended time accommodation may be necessary, in what circumstances (i.e., assessment tasks) it may be required, and how much additional time is appropriate. We examine three specific questions (when, what, and how) with regards to provision of extra test- taking time for common non-visible disabilities, including specific learning disabilities (LD), attention deficit/hyperactivity disorder (AD/HD), autism spectrum disorder (ASD), and mental health diagnoses.

Specific Learning Disabilities (LD)

Students with LDs in reading have difficulties processing language, primarily the phonological aspects of language that require the ability to analyze, produce, and manipulate speech sounds of spoken words (Hatcher et al., 2002), which can impact word reading, reading fluency, and spelling (Gregg et al., 2008; Kemp et al., 2009; Lindstrom, 2007; Trainin & Swanson, 2005). In addition, given that those with disorders of written output or math may be slower to complete those specific types of academic tasks (e.g., Geary & Brown, 1990; Gregg & Mather, 2002), it makes intuitive sense that an individual with LD in these skills may struggle to complete their tests and examinations in the typical time allocated. As such, extended time may be required for individuals with LD to demonstrate their knowledge on tests and examinations.

Studies have systematically examined the effects of extended time accommodations for post-secondary students with and without LD to determine whether additional time is required. Initially, it was believed that only those with LD benefitted from extra time, allowing them to now access test content in a manner that was equal to their non-disabled peers (e.g., Runyan, 1991; Shaywitz, 2003). This supposition, however, proved to be incorrect, as non-disabled students also improved their performance when given extra time (see Zuriff, 2000). Other advocates then assert that accommodations are reasonable so long as those with disabilities benefit more from an accommodation than do their non-disabled peers, a finding described as a "differential boost" (Fuchs & Fuchs, 2001). For instance, in an early study conducted by Alster (1997), college students with and without LD completed an algebra test under regular time (12 min) and extended time (unlimited) conditions. Students in the LD group scored significantly lower than the non-LD group under the regular time conditions and, while there were no differences between the groups with extended time (as both improved their performance with extended time), the performance gain for the LD group was of a significantly greater magnitude than for the non-LD group. Similarly, Lesaux et al. (2006) examined the reading comprehension skills of university students with reading disabilities in relation to average and above average readers. A norm-referenced reading comprehension measure was administered under both timed and untimed conditions and scores on the reading comprehension task were compared between the time conditions and group status. The students with LD benefited significantly from extra time, while their non-LD peers showed only a non-significant trend towards improvement with extended time.

In a more recent study, Harrison (2017) employed a repeated measures design to examine writing performance with and without extended time across lower-level and higher-level aspects of writing performance in post-secondary students with and without LD. Both groups produced more text under extended time, but the LD group produced significantly more text (the LD group wrote nearly twice as many more words as the non-LD group with extended time) supporting a differential boost (Fuchs & Fuchs, 2001; Sireci et al., 2005) in performance. Similarly, while both groups produced more lexically diverse text when provided with more time to write, within-group comparisons indicated that the LD group's text contained a significantly greater number of different words when they had extended time.

Thus, research has demonstrated that students with LD attain higher scores when provided with additional time on assessment measures, with the magnitude of improvement often being larger for students with LD than for their non-impaired counterparts. However, other researchers (e.g., Lovett & Lewandowski, 2015) suggest that it is inequitable to withhold an accommodation from non-disabled students if it is also of benefit to them. The question, therefore, is how much extended time is required to "level the playing field" as opposed to providing a benefit to only one group? Lewandowski et al. (2013a) examined the effects of extended time for students with and without reading disabilities on a difficult reading comprehension measure. These authors found that providing 25% extra time was sufficient to equalize access for those with LD in reading compared with non-disabled students provided with only regular time. Additionally, providing 50% extended time actually overcompensated college students with LD, allowing them to access significantly more test items than peers who wrote with only standard time. Similarly, Cahalan-Laitusis et al. (2006) found that the majority of students with LD who were writing their SATs

in untimed conditions needed less than 25% additional time in order to access the same number of questions as their non-disabled peers; however, the time used was noted to vary by task type. For example, students with LD used approximately 4% more time to complete writing tasks, 14% more on mathematics tasks, and 25% more on critical reading tasks. In addition, Golan et al. (2020) compared the usage of additional testing time for engineering students with and without disabilities (AD/HD and LD) across courses. Students with disabilities utilized between 11–20% more time than their non-disabled peers, depending on test content. In a Canadian post-secondary study, Holmes and Silvestri (2019) reviewed data from 825 tests/exams written by 87 students with LD in a college test center. They found that the majority of students with LD given an accommodation of 50% extra time did not use any of the extra time. In fact, approximately two-thirds of such exams were completed within standard time, and the students who did use the extra time almost exclusively finished after using only some portion of 25% extra time. Similarly, Sokal and Vermette (2017) examined extended time usage across 8,857 exams completed by SWDs (specific disability diagnoses were not available) at both a large and small university. They found that 35.5% of exams were completed within the typical time allotments (standard time), and 55% of the exams were completed with an addition of 25% extended time or less. Even more interesting is that 85% of the tests were finished under the condition of 50% extra time or less.

Most recently, Lindstrom et al. (2021) replicated these investigations with a sample of 2,227 undergraduate tests, confirming that the amount of time used in the completion of these tests as taken by students with various invisible disability diagnoses was consistently less than the extra time granted. They also found that tests administered with 50% extra time were completed with an average of 14% extra time. No consistent pattern emerged regarding the amount of extra time used by disability type. Of all tests taken with 50% extra time (for all disability types), 37% were completed within standard time, and 55% were completed within 25% extra time. For tests approved to be written with 50% extra time by students with LD diagnoses, about 2/3 of the exams were finished within regular time or with up to 25% extra time. They conclude that the amount of extra time granted often has little correlation with the amount actually required for students to complete a test, and that their results support use of 25% extra time as a baseline accommodation for those with non-visible disabilities.

Thus, based on current research, there is insufficient evidence to suggest that the majority of students with LD, in general, require an extended time factor above 25% for tests and examinations. Specifically, research suggests that 25% additional time may be enough for most post-secondary students with LD to complete tests (Cahalan-Laitusis et al., 2006; Holmes & Silvestri, 2019) and even to normalize their performance to that of non-disabled students (Lewandowski et al., 2013a). Interestingly, this aligns with the approach used in the UK and Israel, where 25% is the usual amount of extra time granted (Golan et al., 2020; Kozma, 2016; Ofqual, 2015), and Australia where students are typically offered between 5–10 min extra per hour for tests (Australian Disability Clearinghouse on Education & Training, 2022; Parkyn, 2008; Victoria Curriculum & Assessment Authority, 2021). Having said this, it does appear that students with LD may sometimes require more than this base amount of time in order to participate equally, as shown by the findings of Lindstrom et al. (2021), wherein 16% of tests written by students with LDs (and allotted 50% extra time) were completed using 26–50% extended time, and, another 17% of these tests were completed using more than 50% extra time. What is unknown about this latter group of students, however, is whether their use of this additional extra time related to access deficits as opposed to learning or test-taking inefficiencies; they may have never been taught how to complete tests quickly or felt the need to finish quickly due to longstanding access to "overtime" amounts of extra time. It is also possible that these are students with more severe levels of impairment in multiple areas of functioning. Given that no research has been conducted on this small group of students, however, it seems possible that 50% extra time, or more, may be necessary in some situations for some student, but the base amount initially offered to those with LDs should normally be 25%.

Attention Deficit/Hyperactivity Disorder (AD/HD)

Individuals with AD/HD experience challenges with inattention, hyperactivity, and/or impulsivity. Many students with AD/HD report issues with distractibility during tests and examinations, as well as a tendency to commit careless errors due to inattentiveness or impulsivity. Thus, test accommodations may be warranted for individuals with AD/HD to minimize distractions and allow students the opportunity to review their work for accuracy and completeness.

A number of recent studies have shown that students with AD/HD do not require extra time on tests and examinations in order to participate equally relative to their non-disabled peers. Quantitative data analysis has shown no significant difference in performance in the conditions of regular time versus extended time in either paper–pencil or computerized testing conditions (Cahalan-Laitusis et al., 2006; Jansen et al., 2019; Lee et al., 2010; Miller et al., 2015; Pritchard et al., 2016). Similarly, a study by Lewandowski et al. (2013b) examined variables that contribute to the reading

comprehension ability of college students with and without AD/HD. They found that students with AD/HD and their non-disabled peers performed equivalently on tests of reading speed, vocabulary, decoding, and overall reading comprehension under conditions of equal test time. Interestingly, the students with AD/HD reported higher subjective levels of test anxiety and less confidence in test-taking even though their actual test performance was comparable with peers. In other words, those with AD/HD felt that they needed extra time, but in fact were able to access as many test questions as non-disabled students even when no extra time was offered. Further supporting this finding, Miller et al. (2015) found that college students with an AD/HD diagnosis did not benefit from additional time to take a highly speeded test any more than did their nondisabled peers. Lewandowski et al. (2015) examined the test-taking skills of high school students with and without AD/HD. Students with AD/HD made some (but not significantly more) errors on some reading tasks, yet performed similarly to typical students on indices of speed and number of test items accessed.

Research results do not support granting additional time to students with AD/HD in general. But what about severe cases of AD/HD? Lovett and Leja (2015) found that students who reported more symptoms of AD/HD actually benefitted less from extra time than did students without AD/HD, and their self-reported perceptions of their need for extra time did not predict benefit from this accommodation. They hypothesized that students with more AD/HD may be less likely to use their extended time effectively because of executive functioning problems, which may cause them to make poor use of additional time. Moreover, some college students with AD/HD report that extended testing time may actually hinder their performance. Many report that "the pressure to finish the test quickly is what gives them the stimulation they need to focus" (Farrell, 2003, p. 51). Lindstrom et al. (2021) found that undergraduate students with comorbid diagnoses of AD/HD, LD and a psychiatric disorder actually used the least amount of extra time of all disability groups studied. Finally, Ofiesh et al. (2015) conducted focus groups with students with co-morbid AD/HD and LD and those with solely AD/HD. The focus group comments revealed that the students with AD/HD wanted extra time for reasons that differed from those endorsed by students with combined AD/HD and LD. The students with the comorbid diagnoses indicated that extra time helped to ameliorate their word decoding difficulties or sluggish reading speed, while the students with the single diagnosis of AD/HD sought extra time in order to take breaks, move around, or regain focus. Given these comments, the researchers recommended that "stop-the-clock" breaks may be a more appropriate and reasonable accommodation than extended time for students with AD/HD.

Autism Spectrum Disorder (ASD)

Some of the specific needs that have been identified at the post-secondary level for young adults with ASD include social communication, handling the lack of structure and routine in college, executive functioning requirements, managing time or unexpected change, and managing co-morbid conditions such as anxiety, depression, and obsessive –compulsive disorder (Cai & Richdale, 2016; Gelbar et al., 2014; Jansen et al., 2017). However, while individuals with ASD may share common diagnostic features, there is great heterogeneity across the autism spectrum. This variability, in combination with a limited body of research, makes it extremely difficult to draw general conclusions about academic impairment and appropriate accommodations. With this said, we turn to the question of whether extended time for tests and examinations is an appropriate accommodation for individuals with ASD.

A survey of accessibility service providers at 30 colleges and universities conducted by Barnhill (2016) indicated that the most commonly provided accommodations for students with ASD included access to an advisor, tutoring, and modifications to testing procedures. In another survey of post-secondary institutions conducted by Brown and Coomes (2016), all schools reported offering additional exam time to students with ASD. Similarly, based on a survey of the experiences of post-secondary students with ASD, Jansen et al. (2017) documented that extended time for completing exams was both the most frequently used accommodation as well as the accommodation perceived by students as most effective. However, there is limited research to support this accommodation, as much of the research that has been done in this area is in the form of surveys or case studies (Bouck, 2017; Zeedyk et al., 2016). In fact, no studies could be identified that compared assessment completion times between individuals with and without ASD, nor were there studies that examined performance differences at standard versus extended time limits. As such, there is currently no research data to either support or refute the provision of additional time for individuals with ASD. Therefore, students with ASD should be evaluated on a case-by-case basis for appropriate accommodations, including extended assessment time, using a standard decision-making model (see below).

Mental Health

The number of students with mental health complaints enrolled in postsecondary institutions has grown markedly (American College Health Association, 2011, 2019a, b). It is therefore not surprising that post-secondary institutions

are receiving increasing requests for disability-related accommodations for students with mental health diagnoses (Gotlib et al., 2019), with mood and anxiety disorders the most commonly reported by students (Holmes & Silvestri, 2016; Keyes et al., 2012). Individuals with specific mental health disorders may report experiencing academic performance difficulties as a function of their illness. For example, in a study by Holmes and Silvestri (2016), post-secondary students with a mood diagnosis reported challenges with alertness/attention, while those with anxiety disorders were more likely to report issues with memory/executive functions. Thus, mental health symptomatology may exert an impact upon an individual's academic skills and ability to consistently access the post-secondary curriculum such that academic accommodations of some type may be appropriate.

The test accommodation that is most frequently requested and granted to post-secondary students with mental health difficulties is extended time (Brockelman, 2011; United States Government Accountability Office, 2012), yet until recently no empirical research had explored whether this is a reasonable accommodation for those with mental health disorders. Addressing this gap in the literature, Harrison et al. (2020) evaluated the functional effects of severe mental health symptoms on academic fluency and speed of knowledge retrieval to assist clinicians and educators in determining whether extra time accommodations are reasonable for students with such diagnoses. Utilizing a large ($n = 1{,}476$) sample of post-secondary students, they examined the performance of students with existing mental health diagnoses who were also reporting extremely high current symptom levels, comparing their performance on timed assessment measures to students with reading disabilities, AD/HD, and clinical controls with no diagnosis. Those students diagnosed with anxiety and/or depression did not differ from clinical controls on any timed performance measure, (except math fluency on which both groups struggled), typically performing within a normal amount of time. Students with severe mental health complaints also performed more efficiently than those with LD or AD/HD on all academic fluency and speeded knowledge retrieval measures. These findings suggest that students with mental health diagnoses do not typically require increased time to perform speeded academic tasks.

Conversely, arguments have been made that providing extra time to students with disabilities helps reduce their anxiety, frustration, and stress, such that although they may not use the extra time it helps them feel better during exams (Sokal & Desjardins, 2016). However, many post-secondary students want extra time in order to reduce the pressure they experience during timed exams (see Gernsbacher, 2015). Furthermore, studies have shown that the same anxiety reduction benefit of extra time is enjoyed by both non-disabled students and those with diagnosed disabilities (e.g., Elliott & Marquart, 2004; Lang et al., 2005; Lewandowski et al., 2014), and many non-disabled students subjectively report a belief that they, too, would benefit from provision of extra time (Lewandowski et al., 2014). Given that test anxiety affects the performance of between 15 and 40% of non-disabled secondary and post-secondary students (Alghamdi, 2016; Gregor, 2005; Putwain & Daly, 2014), it would be unfair and discriminatory to use this rationale to provide extra time only to those students with a formal disability diagnosis (Bilodeau & Meissner, 2018).

A further concern is that provision of accommodations may, at times, contribute to complacency instead of promoting treatment. For example, validated interventions exist for test anxiety (Prinz et al., 2019; von der Embse et al., 2013; Zeidner, 1998), and a successful intervention would be far more effective in the long-term than offering short-term accommodations, which may only reinforce a student's belief that they are unable to perform under standard time limits with no hope of improvement.

Until the literature provides clearer guidelines, use of a standard decision-making model (see below) is recommended, with particular attention paid to areas most relevant to mental health disorders. Specifically, there must be a clear link between the functional impairments that arise from the disorder and a need for additional time for tests and examinations. For example, is the student reporting a tendency to freeze and panic in test situations, which they claim is impairing their ability to complete the test in the typical time allocated? In such cases, might it make more sense to recommend stop-the-clock breaks to allow the student to implement anxiety reduction strategies rather than simply remaining longer in an anxiety-producing situation? Second, is it likely that treatment for this disorder will improve their functioning over time and allow a reduction in accommodations? If so, implementation of temporary accommodations may be beneficial, but should be revisited on a regular basis. Finally, given that psychiatric disorders are often treated with psychotropic medications, consideration of the impact of their medication (including side effects) on their functioning, particularly at different points in the day (morning versus afternoon), may be warranted.

Co-morbid Diagnoses

So far, we have considered recommendations for specific clinical disorders. However, students may present with co-morbid disorders and their various conditions may have a synergistic effect. For example, Eisenberg et al. (2009) posited that the academic performance challenges of students with a co-morbid mental illness diagnoses are additive or of a greater severity than those experienced by students presenting with a single mental illness diagnosis. Mood and anxiety disorders

appear to be the most common co-morbid conditions found in those with AD/HD; as many as 25% to 35% of persons with AD/HD also meet criteria for co-morbid major depressive disorder (Kessler et al., 2006; McGough et al., 2005) and 47.1% meet criteria for an anxiety disorder at some point in their lives (Kessler et al., 2006). Individuals with ASD are often diagnosed with co-morbid psychiatric conditions, such as anxiety, depression, and obsessive–compulsive disorder (Cai & Richdale, 2016; Gelbar et al., 2014; Jansen et al., 2017). Thus, there may be circumstances when an individual with multiple diagnoses may require access to additional time for tests and examinations that exceeds the recommended baseline of 25% additional time. These more complex cases would need to be assessed on a case-by-case basis, keeping in mind that other accommodations, such as the provision of assistive technology, a distraction-reduced environment, and/or stop-the-clock breaks may alter the functional limitations caused by their co-morbid disorders.

Standard Decision-Making Models

Various scholars have proposed processes to determine appropriateness of accommodations (e.g., Brinckerhoff et al., 1992), as the same accommodation may affect students within the same categories of disability differently (Lindstrom, 2010). With regards to extended time accommodations, both Lovett (2011) and Ofiesh et al. (2004) provide sample decision aids for determining when extra time may be a necessary accommodation for a given student.

As a first step, Lovett (2011) recommended that there should be clarification of which specific functional impairments influence the need for specific accommodations. Test accommodations should be reserved for students with actual limitations in test-taking skills and abilities (Lovett et al., 2019). Thus, it must be determined which academic areas are impaired (defined as *substantially and quantifiably below* those expected for the individual's chronological age and sufficiently weak to cause significant interference with academic performance). Central to this premise is evidence that a student is actually unable to complete exams in the allotted time (e.g., they consistently fail to complete tests and exams in the typical time allotted and/or have required additional time on tests or exams in the past). In terms of specific assessment measures, research by Ofiesh et al. (2005) suggests that scores from the Woodcock Johnson (most recent version fourth edition (WJ IV); Schrank et al., 2014) Reading Fluency subtest and Academic Fluency cluster are good indicators of the need for extended time (provided the student was performing credibly, see Harrison et al., 2010). As these fluency scores decrease, the probability increases that a person will need extended test time on a reading-based multiple choice test, particularly those who scored in the Borderline to Very Low range on these WJ measures. Further supporting the specificity of this assertion, more recent research by Lovett et al. (2017) and Lovett et al. (2020) noted that processing speed measures appear to be of limited value compared with reading fluency measures when predicting test completion time for reading-heavy tests.

Next, it should be considered whether the student's disability limits performance or interacts with the methods of assessment in the course. For example, if a student's LD primarily hinders fluent written expression and their tests are primarily multiple choice in nature, there may be little rationale for providing extended time. Furthermore, if the student's LD is in the area of mathematics, no additional time would be required for evaluations that lack a mathematical component. An additional consideration that is often overlooked is whether the underlying academic impairment is already corrected with an existing accommodation. For example, if the student has difficulty with reading fluency, is this already corrected with the use of text-to-speech software? If the student has challenges with math calculation, would provision of a calculator fully address their area of impairment?

According to Lovett (2011), other explanations for slow performance, such as anxiety or inefficient test-taking skills, then need to be ruled out. If extended time is being considered due to test anxiety or other emotional or behavioral concerns, an intervention may be more appropriate, while extended time may be inappropriate and potentially harmful in the long run (e.g., Bilodeau & Meissner, 2018).

Furthermore, as supported by Sokal and Wilson (2017), the need for extended time should be re-evaluated at an annual review with the student's college disability advisor, which could include examining the student's actual use of extended time. They reasoned that because students change in terms of their needs and abilities over the course of their studies, a regular review of the utility of their extended time accommodation can offer guidance on the amount of extra time needed by students with different disabilities. Relatedly, as demonstrated by the Golan et al. (2020) study, monitoring of the actual amount of extra test time used is critical feedback for students with disabilities. If the accommodated student consistently completes most tests within a normal amount of time it would be important to help them explore under which specific circumstances they actually require extra time (as opposed to using it as a way to relieve performance anxiety), and the amount actually required for equal access. Objective information like this will improve the student's ability to self-advocate effectively in future. This approach holds merit until sufficient studies are conducted to generate evidence-based rules for the determination of extended time allotments.

Finally, given the literature suggesting that extended time changes the interpretation of test scores, Lovett (2011,

2020) opines that extended time should not be provided as a default; instead, it should require evidence that the accommodation is both necessary and appropriate. If the decision is made to provide extended time, he recommended that the efficacy of small amounts (i.e., 25%) be examined before providing larger amounts and that it be ensured that the extended time accommodation is only provided for evaluations that make demands on the impaired academic skill. If more than 25% extra time is required, justification should be made by documenting the severe problems underlying this need.

Conclusion

In conclusion, recent research into the needs of post-secondary students with non-visible disabilities:

- Fails to support the need for more than 25% extra assessment time as a reasonable accommodation for functional impairments secondary to a learning disability. In exceptional cases, up to 50% extra time may be required to compensate for severe impairments associated with a LD, but this would require objective evidence supporting the need for this accommodation rather than be given on the basis of convention or past history. In addition, the extended time accommodation is only appropriate when academic skill fluency is a concern, the functional impairments overlap with test demands, the impaired academic skill is not already corrected with another accommodation (such as assistive technology), and the need for additional time is not related to another, treatable, condition, such as test anxiety or inefficient work habits.
- Fails to support the need for additional assessment time for students with AD/HD. Instead, clinicians may wish to determine other accommodations to address specific areas of disability-related difficulty, such as a stop-the-clock break to allow the student to refocus prior to reviewing their work for accuracy or completeness.
- Is silent on the appropriateness of additional time for tests and examinations for individuals with autism spectrum disorder.
- Fails to support the need for extra time due to impairment in reading speed, processing speed, or attentional capacity for those with mental health conditions, such as anxiety or depression.
- Fails to support a need, generally, for more than 25% additional time for those with co-morbid diagnoses, though the severity and complexity of the presentation may need to be considered on a case-by-case basis (though no more than 50% additional time would likely be appropriate as a basic accommodation).

Clinical practice must move away from providing accommodations rooted in tradition and instead use evidence-based decision-making models when making such recommendations, especially at the post-secondary level. The provision of extended time to students with disabilities continues to hold merit as a means to ensure equivalent access to post-secondary learning requirements; however, the current practice of offering more than 25% extended time to students with non-visible disabilities is advantageous rather than equalizing. Furthermore, research shows that fewer than half of accommodated students actually use any extra time at all, and those who do rarely use more than 25%. This finding mirrors that of Gernsbacher (2015) who posited that most post-secondary students want extra time to provide a safety net that relieves their anxiety about running out of time. Reliance on an accommodation that is costly (in both invigilator time and separate testing space) but is hardly ever used (or used fully) seems an expensive anxiety-reduction crutch, especially where there are other, better options available to help reduce performance anxiety and improve long-term functioning. The accommodation of extra time should be specific to the functional impairments associated with the specific disability, with clear links between documented functional impairment and test/exam requirements. Extra time accommodations should allow students with specific disabilities an equal opportunity to participate, not confer a test-taking advantage. Thus, further research is required to provide more evidence-based information from which clinicians and post-secondary institutions can base appropriate extended time allotments to provide equitable access for students with disabilities.

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