the ADHD REPORT

Russell A. Barkley & Associates

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Neuropsychological Testing in ADHD: A Special Issue

Neuropsychological Testing is Not Useful in the Diagnosis of ADHD: Stop It (or Prove It)!

Russell A. Barkley, Ph.D.

Every week in the United States, thousands of people are evaluated for ADHD. In many instances, though not always, neuropsychological testing is being employed as part of a larger psychological evaluation. Such testing is often required by referring agencies to establish the diagnosis of ADHD. Standardized testing agencies, professional license examining boards, the Social Security Administration, and universities, employers, and others considering granting accommodations or entitlements for ADHD under the Americans with Disabilities Act often require that such testing be done as part of their documentation for establishing the diagnosis of ADHD. Public school systems may also require such testing in order to grant special educational services and accommodations under the Individuals with Disabilities in Education Act or Section 504 of the Civil Rights Act. But is such testing actually useful—accurate—in establishing the diagnosis of ADHD? I do not believe it is, and I think the available evidence supports that conclusion.

Some of my academic colleagues may believe that I am setting up a straw man to knock down, since, they believe, the use of neuropsychological tests to diagnose ADHD is not a widespread practice. I respectfully disagree. It is difficult to appreciate the scope of the problem because there is no convenient way to sample the range of neuropsychological reports being generated in clinical practice in the U.S. Nevertheless, it is my opinion that the practice is widespread. My conclusion comes from reviewing documentation submitted to testing and licensing agencies, reviewing psychological evaluations of children and adults for cases referred to medical centers, engaging thousands of professionals each year through my lectures on ADHD, and comprehensively reviewing ADHD research published on a weekly basis.

The use of neuropsychological testing for diagnosing ADHD is not just a problem in clinical practice, though clinical practice is largely the focus of this critique. But this bias can also be seen in research articles on EF and ADHD where authors conclude their articles by making encouraging statements about the value of particular EF tests for the clinical diagnosis of ADHD in view of their results. Yet their results usually only deal with mean differences between groups having ADHD, meta-analyses of such group differences, and statistics involving sensitivity and specificity. None of these speak to the individual classification of cases as is done in clinical diagnosis, as I discuss below.

Let me be very clear here; the following remarks do not pertain to the value of neuropsychological—much less psychological—*evaluations* in the diagnosis

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of ADHD. Such evaluations include multiple methods and sources of information essential to making such a diagnosis based on official criteria (APA, 2013), including history, interviews concerning past and current functioning, rating scales of ADHD, comorbid psychopathology and impairment from the patient and/or others who know them well, etc. (Barkley, 2015; Ramsay, 2015). And all of this is combined with professional knowledge and skill in differential diagnosis in reaching decisions about the diagnosis of ADHD.

Although they are often employed in neuropsychological evaluations, I am not referring to the use of IQ or academic achievement tests. These tests are essential to document learning disabilities and intellectual disability. I am challenging the addition of other neuropsychological testing, usually focusing on executive functioning (EF), because I believe these tests have questionable utility in the diagnosis of ADHD. Do such tests add any incremental utility *in making the diagnosis and especially the differential diagnosis of ADHD*? I assert that they do not. Perhaps those tests have value for other purposes in studying ADHD, such as in research studies on groups, although even that is arguable given the reasoning set forth below. And these tests might have value, at some point, in characterizing the specific cognitive profile of a given individual, when appropriate (as in treatment, vocational or educational planning). Yet for making an individual level diagnosis they are not useful and can even be misleading. Here is why.

For one thing, the false negative rate is far too high. A full 35–87% of cases diagnosed with ADHD can pass neuropsychological tests while having documented ADHD. This makes normal scores on the tests useless for ruling out ADHD (Baggio, Hasler, Giacomini, El-Masri, Weibel, Perroud & Deiber, 2019; Bunger, Urfer-Maurer, & Grob, 2019; Holst & Thorell, 2019; Matier-Sharma, Perachio, Newcorn, Sharma, & Halperin 1995; Sjowall & Thorell, 2018). This problem seems to cut across all types of EF tests, including continuous performance tests (CPTs). It was true 15 years ago when James McGough and I wrote an article on issues in the diagnosis of ADHD in adults (McGough & Barkley, 2004), and it remains true today (Baggio et al., 2019; Lambek, Tannock, Dalsgaard, Trillingsgaard, Damm, & Thomsen, 2011; Ramsay, 2015). The evidence to date also shows such tests are very poor at detecting malingering of ADHD (Booksh, Peila, Singh, & Gouvier, 2010), an issue that is especially important when people are seeking accommodations in testing or in the work setting.

By contrast, rating scales of executive functioning may be as or more useful in assessing EF and in diagnosing ADHD. That is because they are (1) more ecologically valid in focusing on executive functioning in natural settings; (2) capture a far greater window of behavior (usually months or longer instead of minutes as in tests); (3) sample more components associated with the meta-construct of EF not readily assessed by testing (emotion regulation, self-awareness, self-motivation); (4) and allow involvement and the opinion of others who likely know the patient well (such as parent and teacher ratings or adult collaterals, although forms and norms for the latter may not always be available). And (5) the ratings are far more cost-effective in obtaining such information. Rating scales are thus more likely to detect the presence or absence of both EF deficits in daily life and those involved in ADHD (as well as ADHD symptoms) than do neuropsychological tests (Barkley, 1991, 2011a, 2011b; Bunger et al., 2019). Indeed, EF ratings are so highly correlated with ADHD symptoms, even when ADHD symptoms are specifically removed from EF rating scales, they may be considered to be collinear (tapping the same construct), especially for the inattention dimension of ADHD (Barkley, 2011a, 2011b, 2012).

That is not to say that rating scales are perfect; far from it. And it is not to argue that they should serve as the sole basis for making a diagnosis of ADHD, replacing the EF tests clinicians may be using. But as one source of information to rely on in the typical multi-source evaluation, *the EF ratings are far more likely to be valid indices of the presence of EF deficits and of ADHD than are the neuropsychological tests.*[1]

Some evidence does suggest that if a person has an abnormal score on a neuropsychological test, usually on measures

1. Of course, rater biases can be problematic in some cases. People can feign deficits on these scales, but in most cases where patients and collateral sources make a good faith effort to complete the scales and tests, the ratings will be more reflective of EF in natural settings and more highly related to domains of impairment than will the neuropsychological tests, especially when controlling for IQ that can contaminate some EF tests.

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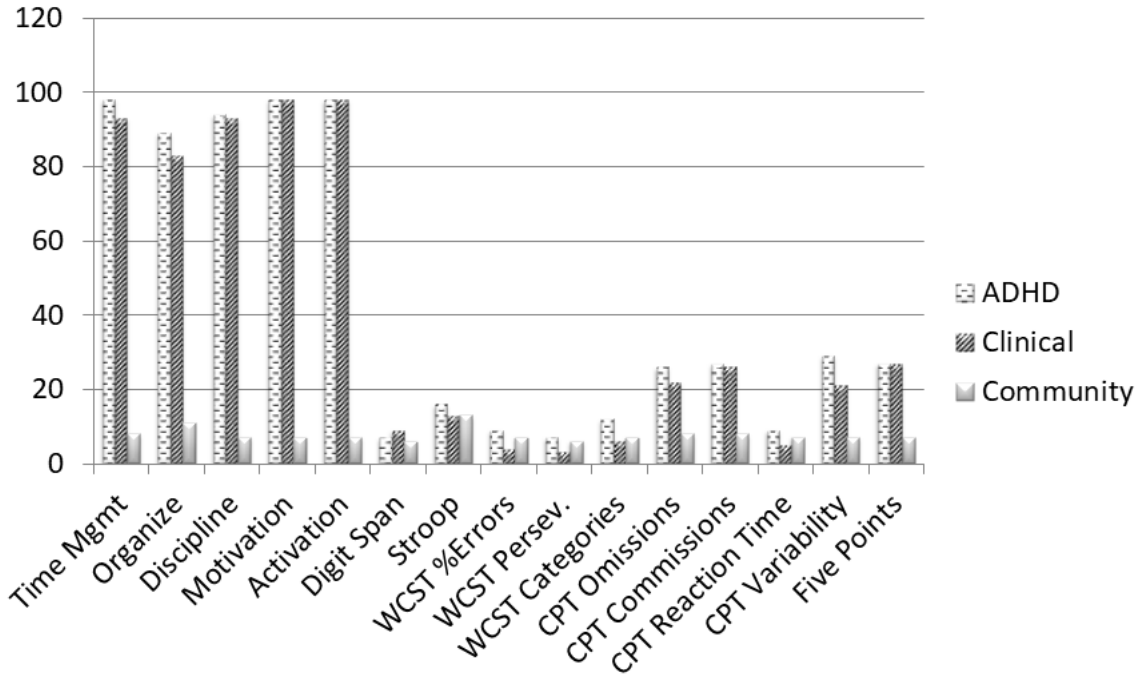


FIGURE 1. Comparisons of ADHD, Clinical Control, and Community Control Groups on EF rating scale results (left side) vs. EF tests in the percentage placing above the 93rd percentile (disordered range). WCST = Wisconsin Card Sort Test. CPT = continuous performance test.

from a continuous performance test (CPT) and especially on its score of reaction time (RT) variability (Epstein, Erkanli, Conners, Klaric, Costello, & Angold, 2003), some disorder is present. But even for RT variability, *the capacity to differentiate among disorders is limited* (Kofler, Rapport, Sarver, Raiker, Orban, Friedman, & Kolomeyer, 2013). Given an abnormal score on an EF test, the odds might be as high as 90% chance that some disorder is present (i.e., Barkley & Grodzinsky, 1994; Grodzinsky & Barkley, 1999), but not always (Baggio et al., 2019). Others have observed similar results as well for a battery of neuropsychological tests (Lovejoy, Ball, Keats, & Stutts, 1999) as did Mayes and colleagues for a popular continuous performance test (Mayes, Calhoun, & Crowell, 2001).

However, other studies showed that the odds that an abnormal score indexes ADHD specifically is 50–70% or less, especially when other clinical disorders must be differentiated from ADHD—a primary goal in clinical assessment—even when the much validated score of RT variability is considered (Kofler et al., 2013). People who are referred to mental health professionals typically have some type of disorder. Therefore, the goal of most clinical evaluations is differentiating diagnoses among disorders, not just documenting the presence of disorder. Hence, abnormal scores may be meaningful in a general way, indicating presence of some disorder. For instance, people with learning disabilities (Stern & Morris, 2012; Wu, Anderson, & Castiello, 2002), schizophrenia, depression (Katz, Wood, Goldstein, Auchenbach, & Geckle, 1998), bipolar disorder, and other conditions can also fail these various EF tests (Riccio & Reynolds, 2001 Romine, Lee, Wolfe, Homack, George, & Riccio, 2004; Walker, Shores, Troller, Lee, & Sachdev, 2000). The clinician still has to gather other information and engage in differential diagnosis using established diagnostic criteria to determine what disorders may be present. Therefore, if most patients with ADHD can pass the neuropsychological tests—and even when they may fail, the diagnosis of ADHD is not assured—then what good are these tests in making that diagnosis?

The following two figures were created using the results from my studies on ADHD. They show the marked difference between the results one obtains from a battery of EF tests (see columns on right half of figure) compared to an EF rating scale in classifying cases (see columns on left side of figure) (figures indicate percentage of cases falling 1.5 *SD*s from the mean or at the 93rd percentile). This cutoff insures a false positive rate of at least 7% on any measure in the control group (assuming cases of disorder were screened out, as in my studies and related graphs above). Also note that this EF rating scale does not contain the *DSM* symptom items for ADHD and so high scores are not due to contamination by symptoms used in the diagnosis of ADHD in these cases.

Figure 1 compares clinic-referred adults with ADHD (*DSM-IV* criteria) to other adults seen at this same clinic who thought they had ADHD but did not meet diagnostic criteria (*DSM-IV*), and a community control group (Barkley & Murphy, 2010). Given that a large percentage of the clinical controls also likely had sub-threshold (symptomatic) ADHD (4–5 symptoms on either symptom list) but not diagnostic or syndromal ADHD (the 6 symptoms required in *DSM-IV* in use at the time of the study), the high EF ratings among the clinical control group make sense. Bars to the left are from my EF rating scale prototype (see Barkley, 2011a), while those on the right beginning with Digit Span from the WAIS-III are the EF tests.

The difference in results between ratings is frankly both stunning and sobering. Similar findings were evident in our Milwaukee young adult follow-up study (Barkley & Fischer, 2011) shown in Figure 2. Here, the ADHD-P group contains cases that persisted to age 27, ADHD-NP are

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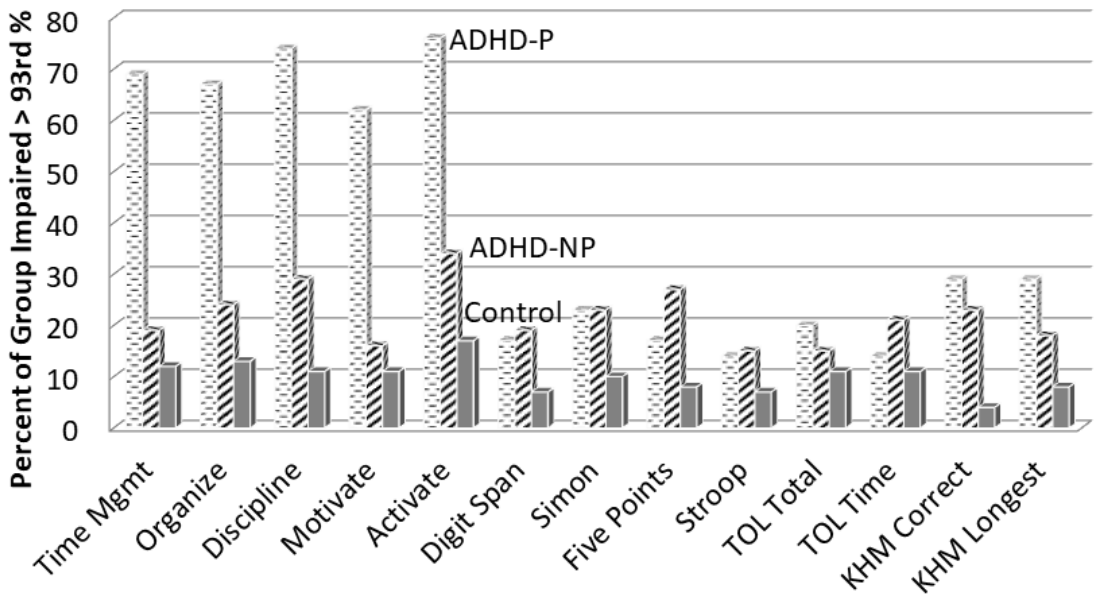


FIGURE 2. Comparisons of ADHD children whose ADHD persisted to age 27 years (ADHD-P), did not persist (ADHD-NP), and Community Control Groups on EF rating scale results (left side) vs. EF tests in the percentage placing above the 93rd percentile (disordered range).

cases that did not meet diagnostic criteria at follow-up (many were sub-threshold and not normal), and our control group. For this study, persistence was defined as 4 or more symptoms of ADHD on either symptom list and impairment in 2+ domains (4+ symptoms has been shown in several studies to be the preferred threshold for identifying adult ADHD and is equivalent to the 93rd percentile of the U.S. population (Barkley, 2011b). The graph layout is the same.

Again, note the striking disparity between the percentages of cases in each group identified as being abnormal or disordered (≥ 93rd percentile) on the rating scale of EF in daily life compared to the EF tests. The vast majority of cases with adult ADHD in the first study and ADHD-P in this study were identified as deficient in EF in daily life on the rating scale while only a small minority was identified as such on any EF test. Also note in the second graph from the follow-up study that cases with nonpersistent ADHD fell between the ADHD-P and control group. While they could be readily distinguished from those with persistent ADHD on the rating scales this was not the case for most of the EF tests.

These findings visually demonstrate that the conclusions one can reach from an EF test about the presence of ADHD will differ markedly from those one will make from the results of an EF rating scale, yet both are said to be evaluating the same construct. This cannot be the case. My studies are not an exception. Recently, Holst and Thorell (2019) reported similar findings when using both EF tests versus EF rating scales. When employing even a generous definition of being deficient on these measures (greater than 1 *SD* from the mean), 86% of the ADHD sample was so impaired versus 26% on two or more EF tests. Others likewise have recently found weak or no relationships between these methods and grossly disparate results between the two methods of assessment (Baggio et al., 2019; Bunger et al., 2019; Ledochowski, Andrade, & Toplak, 2019; Toplak, West, & Stanovich, 2013).

Usually my colleagues in neuropsychology cite various studies or meta-analyses that compare groups of ADHD and control cases on tests of EF that may have found significant differences between groups (Frazier, Demareen, & Youngstrom, 2004; Hervey, Epstein, & Curry, 2004; Willcutt, Doyle, Nigg, Faraone, & Pennington, 2005). Such findings are largely irrelevant to clinical practice as clinicians do not compare group means for statistical significance—they classify cases. Only if there were a nearly complete separation of the ADHD versus control group distributions would one be able to use the study as evidence for employing those tests for diagnosis in clinical practice, which almost never happens. The overlap in the disordered and control group distributions is far too great to permit accurate classification of individuals. Hence, the bigger problem remains one of an unacceptably high rate of false negatives.

A second argument against neuropsychological testing for ADHD is that EF tests are typically confounded by IQ (Biederman, Petty, Fried, Fontanella, Doyle, Seidman, & Faraone, 2006; Lambek et al., 2011). Cases of ADHD sorted by those who do not pass EF tests versus those who do are primarily distinguished by having a lower IQ (Biederman et al., 2006). This issue was also evident in research done by Mahone and colleagues (Mahone, Hagelthron, Cutting, Shuerholz, Pelletier, Rawlins, Singer, & Denckla, 2002) where group differences on EF tests were found only for those having average or lower IQs. Indeed, those cases having both ADHD and low IQ have evidence of even greater EF deficits than do ADHD cases not comorbid with intellectual disability (Rose, Bramham, Young, Paliokostas, & Xenitidis, 2009). Given the low but significant correlation of IQ with EF tests (but not rating scales; Barkley, 2011a, 2011b), this poor performance by those with ADHD, particularly those with low IQ, would be expected.In some studies, covarying out

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IQ in the analyses led to a loss of significance in even group level differences on EF tests (Adolfsdottir, Sorenson, & Lundervold, 2008). Hence had they controlled for IQ differences among the groups (Holst & Thorell, 2019), studies that show some putative incremental advantage to predicting impairment in school, work, or in criminality from EF test performances compared to rating scales would, in all likelihood, not have done so. Yet across such IQ classifications in these studies, all cases of ADHD are valid cases.

To complicate matters further, ADHD has an inherent low but significant negative relationship to IQ, with which it shares about 6–10% of the variance (Tillman, Bohlin, Sorenson, & Lundervold, 2009). This relationship is through shared genetic and developmental etiological influences (Rommel, Rijsdijk, Greven, Asherson, & Kuntsi, 2015) and to some extent (4–46%) may be mediated by EF components related to both variables (Tillman et al., 2009). Thus, IQ differences between ADHD and control groups are not merely a consequence of confounding or errors/bias in participant selection. And that is why those IQ differences should not be statistically controlled or covaried in research on ADHD. Doing so removes meaningful variance from ADHD, the independent variable of interest (Miller & Chapman, 2001), and unnecessarily and erroneously reduces potential group differences on the dependent variables resulting in meaningless or unrealistic residuals. Regardless, this evidence of an association of ADHD with lower IQ in the context of IQ contributing to differences between ADHD and control groups on EF tests may simply indicate the presence of low IQ and not of ADHD, even when EF test results are abnormal.

The third argument against neuropsychological testing for the diagnosis of ADHD is that the results of EF tests have no ecological validity; that is, they do not significantly correlate with ratings of EF in daily life (see meta-analysis by Toplak et al., 2013; Bunger et al., 2019; Holst & Thorell, 2019; Lebochowski et al., 2019; Sjowald & Thorell, 2018). And it is also true for neuropsychological measures of attention/impulsivity, such as CPTs, and their relationship to ratings of ADHD (Barkley, 1991; Edwards, Gardner, Chelonis, Schulz, Flake, & Diaz, 2007; Naglieri, Goldstein, Delauder, & Schwebach, 2005).

So the tests and ratings are not measuring the same construct, whether that construct is thought to be EF or ADHD symptoms. Some have argued that this may be an advantage for each measurement method in that they may be capturing different aspects of EF (Halperin, personal communication, January 2019; Holst & Thorell, 2019). That might be the case if there were at least moderate and significant correlations between them so that there was a significant portion of shared variance (say 25–50%) while still not sharing most of the variance. But the complete lack of significance in their relationship and shared variance—often below 10%—is not a compelling argument that they are somehow capturing different aspects of the same construct. They are not capturing the same construct at all! I consider this is a serious problem for putative tests of EF (or of ADHD symptoms like CPTs).

The aforementioned findings concerning the lack of relationship of EF tests to ratings also suggest that EF tests are unable to predict real world use of EF in daily life; that is, they have little or no ecological validity. And it also guarantees that the results and conclusions of research using exclusively EF tests, as the vast majority of studies on EF do, will be quite different than ratings of EF in daily life. Apart from their lack of utility in clinical diagnosis, the sole reliance on EF tests in research can lead to misleading conclusions about the relationship of EF to the other factors being studied, such as development, domains of impairment, clinical disorders etc., relative to conclusions that might have been reached based on EF rating scales. One can therefore argue that much research on these factors, which relied exclusively on putative EF tests, may have led to misleading results and may need to be redone, incorporating rating scales of EF in daily life.

Yet another argument against EF tests in the diagnosis of ADHD is that the tests predict little if any useful variation in impairment in major life activities, as studies have found (Barkley & Fischer, 2011; Barkley & Murphy, 2010; Sjowall & Thorell, 2018). Yes, there is some evidence that EF tests may predict academic achievement, but that may be because they are correlated with IQ. The EF tests add little or nothing to explaining variance in achievement when IQ scores are also available for use (Mayes, Calhoun, Bixler, & Zimmerman, 2009) or their contribution becomes nonsignificant when IQ is statistically controlled. Rating scales are better at predicting impairment and in more domains of impairment than are EF tests (Barkley & Fischer, 2011; Barkley & Murphy, 2010). Those ratings are also not contaminated by IQ (Barkley, 2011a). So if prediction of impairment in major life activities is the other justification for giving those with ADHD neuropsychological tests, one is better off using a rating scale.

I could have cited many more studies as evidence of the problems that were raised above with neuropsychological tests. Yet what has been cited should suffice to challenge the idea that such tests are essential or incrementally useful for the diagnosis of ADHD. I am not the only one who has reached this conclusion (see Nichols & Waschbusch, 2004; Seidman, 2006). And it is why neuropsychological tests of EF have been questioned as endophenotypes for studies of molecular genetics and functional neuroimaging of ADHD (Doyle, Faraone, Seidman, Willcutt, Nigg, Waldman, Pennington, Peart, & Biederman, 2005). The burden of proof now lies with those who would argue for the use of such testing in making the clinical diagnosis of ADHD.[2]

Why are EF tests so poor at identifying deficits in those with ADHD much less at assessing EF? The reasons have been reviewed in detail elsewhere (Barkley, 2011a, 2012; Koziol, 2014).

- For one thing, such tests are very limited in sampling the components of the construct of EF. The vast majority of these tests evaluate cold cognitive

2. One rather insubstantial reason sometimes given for including EF tests in the evaluation and diagnosis of ADHD is not that they are accurate but merely that the patient, their parents, or the schools or other agencies referring them want some objective measure of the disorder so as to affirm its presence. Given the poor sensitivity/specificity, poor positive/negative predictive power and other findings reviewed above, such a rationale is not compelling. Better that we educate that there are no objective or laboratory tests for ADHD, much less any other mental disorder, and that neuropsychological testing is at best ancillary and descriptive, rather than diagnostic. Otherwise we continue with this charade as a justification for neuropsychological testing for ADHD. The current state of the art is that the diagnosis of ADHD is based on a careful history of current and past symptoms and functioning, review of prior relevant records, information collected from others and collateral sources, rating scales of ADHD (and EF) to establish relative deviance from same age peers, and brief psychological testing to screen for intellectual disability or learning disorders (Barkley, 2015; Ramsay, 2015). In short, there is no valid neuropsychological test for diagnosing ADHD (or for any other mental disorder).

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aspects of EF, such as working memory, that mainly involve holding information in mind or manipulating it. Even then, the test items would seem to have little relationship to the sorts of things people must hold in mind in daily life (i.e., appointments, promises, deadlines, commitments, contracts, etc.). Other tasks presumed to assess sustained attention or impulse control do so in ways that hardly resemble the sorts of sustained attention or inhibition in which people must engage in daily life. Detecting Xs from Os on a CPT and inhibited responses to Os or to color words printed in a discrepant color of ink, hardly do so. Others before me have made the same case—it will be difficult, if not impossible, to assess some aspects of EF in a lab environment given available psychometric tests and the limited time period used to do such sampling as well as the artificiality of the task and context (Lezak, 2004; Dimond, 1980; Dodrill, 1997). After all, how likely is a tower task of planning and problem solving to sample the actual and extensive behavior involved in planning out one's day or assigned projects much less a wedding or preparing to apply for college?

- Many components of EF are not being sampled by EF tests. EF is thought to involve not just working memory and planning but also self-motivation, emotion regulation, and time management and the larger domain involving the cross-temporal organization of behavior (Barkley, 2012, Fuster, 1997; Stuss & Benson, 1986). People have to organize long chains or scripts often involving complex subroutines (Grafman, 1995) of goal-directed behavior across hours, days, weeks, and even months while EF tasks rarely take more than 20 minutes each or total to just a few hours.

- The nature of test settings is yet a third problem for assessing EF by tests (L. E. Knouse, personal communication, 1/8/2018). Such settings are artificial, often involve one-to-one assessment, provide high degrees of instructions and clarifications of demands, involve limited if any sources of distractions, and involve supervision by another person. These are precisely the factors that would improve the test-taking performance of someone with ADHD (or any EF deficit) and so limit the detection of their EF and self-regulation deficits. As such those tests and settings are not likely to place as much demands on self-regulation as do natural environments that contain far less and far fewer of these characteristics and where self-regulation is clearly at a premium (work, college, etc.). Also, as Kozial has noted (2014), EF is often demanded when novelty in a situation or task is encountered. Once an EF task has been given, it is far less novel to the individual on subsequent re-administrations. It is thus guaranteed to decline in its sensitivity to what aspects of EF it may have been initially sampling, limited as it may have been even then.

For these reasons, we should hardly be surprised to learn that EF tests are not very good at diagnosing ADHD much less at evaluating EF in daily life activities. This remains true despite commendable efforts by clinical researchers to invent new EF tasks to overcome some of the difficulties with earlier and commonly employed EF tests (Lebochowski et al., 2019).

Given all this, neuropsychological testing should not be used for the diagnosis of ADHD. Such tests could be very misleading if they were the sole source of data. Even if these tests are combined with ratings of EF in daily life (or of ADHD) and other clinical information (archival records, reports of others, etc.), evidence suggests that where the tests yield normal results yet disagree with these other sources, it is the test results that should be ignored. I and like-minded colleagues believe we have reached a point where we have sufficient evidence in the literature to conclude that the continued use of neuropsychological testing for the diagnosis ADHD is unjustified, as well as wasteful, unnecessarily costly, or even negligent. This does not preclude testing for descriptive purposes when indicated, and assuming the evidence base for doing so can be marshaled to support it.

But what are we to do in such cases if the test scores are normal while archival or historical evidence shows otherwise? Our job is to educate schools working to comply with the Individuals with Disabilities in Education Act or Section 504 of the Civil Rights Act, universities giving accommodations under the Americans with Disabilities Act, testing or government agencies, etc. about the lack of an evidentiary base for using tests for diagnosis and their limited utility for determining disability. And we as professionals need to resist demands for neuropsychological testing to confirm or rule out a diagnosis of ADHD. We need to stop making high stakes decisions about the diagnosis of ADHD, and hence related entitlements, protections, and accommodations for people with ADHD on the basis of such testing.

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Counterpoint

Neuropsychological Testing is Not Useful in the Diagnosis of ADHD, But…

Robert L. Mapou, Ph.D.

Dr. Barkley has argued that neuropsychological testing, and, more specifically, testing of executive functioning (EF), is not needed to diagnose ADHD. His arguments, based on research, are, at first glance, strong. His primary arguments are that (1) neuropsychological tests do not discriminate well between individuals with ADHD and clinical controls or even normal controls without ADHD, (2) EF rating scales better capture everyday problems with EF, and (3) EF tests do not correlate well with EF rating scales and do not have good ecological validity. I agree with most of these points. I also agree that if the goal of an evaluation is only to determine if ADHD is present, then neuropsychological testing is not needed. A detailed history review, a review of academic records, completion of rating scales by the patient and an informant, behavioral observations, and consideration of the consistency among the data sources will likely be sufficient. I also agree that in my role reviewing documentation for a community college, for an Ivy League University, and for patients referred to me, similar to Dr. Barkley, I have found that ADHD is sometimes diagnosed based only on neuropsychological test results, typically a continuous performance test, without carefully reviewing the patient's history and specifically reviewing the symptoms of ADHD and associated functional impairment. Conversely, I have seen reports in which ADHD has been ruled out, simply because neuropsychological testing shows no deficits, even when symptoms and functional impairments have been present over a person's lifespan.

Supporting Dr. Barkley's conclusion, a recent article confirmed that neuropsychological tests, alone, do not discriminate between patients with ADHD and patients with other psychiatric disorders. Rather, a careful and very thorough structured clinical interview was found to be most effective for diagnosing ADHD (Pettersson, Söderström, & Nilsson, 2018). However, if the purpose

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