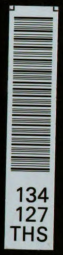

This is to certify that the

thesis entitled

Learning Disability Dissimulation:
An Analogue Study

presented by

Adam Daniel Alban

has been accepted towards fulfillment
of the requirements for

MA degree in Psychology

Major professor

Date 6/18/98

LEARNING DISABILITY DISSIMULATION: AN ANALOGUE STUDY

By

Adam Daniel Alban

A THESIS

Submitted to

Michigan State University

In partial fulfillment of the requirements

for the degree of

MASTER OF ARTS

Department of Psychology

1999

ABSTRACT

LEARNING DISABILITY DISSIMULATION: AN ANALOGUE STUDY

By

Adam Daniel Alban

This research was an effort to understand the possibility of dissimulating on tests of learning characteristics. This project sought to answer the following questions: Is it possible to dissimulate on tests of learning characteristics, and are these attempts detectable? A sample of college students (N=40) was unable to replicate an aptitude/achievement discrepancy where achievement was lower than aptitude. Instead, they displayed an aptitude/achievement discrepancy where aptitude was lower than achievement. Tests designed to detect dissimulation in traditional neuropsychological assessments were found to be helpful in detecting an attempt to dissimulate. In addition, participants were relatively accurately grouped into the dissimulation and control conditions solely on the basis of these specialized tests.

For my grandparents, parents, and brother. Thank you.

ACKNOWLEDGEMENTS

I would like to thank my thesis chair, Dr. Norman Abeles, for his invaluable guidance. His support on all of my projects has been instrumental. I would also like to thank the other members of my thesis committee, Dr. Robert Caldwell and Dr. John Hurley, for their instructive support and feedback. In addition, I could not have completed this project without the support of my family. Last, but certainly not least, I would like to thank my fellow students, who continue to be a source of energy and inspiration.

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INTRODUCTION

Faking or dissimulation on psychological tests has long been a concern of professionals involved with assessment. The benefits to be gained from certain test results may be impetus for some to attempt to alter their performance. For example, individuals who convince a mental health professional of their lack of competence may believe that they can secure special benefits such as social security disability payments. If the test results for individuals accused of breaking the law indicate mental illness, the adjudication process may be changed and their culpability diminished.

This sort of dissimulation was first recorded in biblical scriptures where David faked insanity because he feared punishment by King Achish of Gath (Samuel I, 21:13-16). The investigation of this dissimulation has an almost equally long history. Many of the original writings on dissimulation concern avoiding military service. Militaries were more concerned with losing able-bodied soldiers than any concern for the soldiers' welfare (Mendelson, 1995) and conversely, many able bodied individuals valued health over patriotism.

More recently, the Diagnostic and Statistical Manual of Mental Disorders (DSM IV) has begun to recognize different types of illness and/or injury faking. Conditions such as Factitious Disorders, where an individual assumes the role of a sick person and intentionally feigns symptoms are recognized as forms of dissimulation lacking apparent external incentives. This sort of dissimulation is distinguished from other forms of dissimulation, known as "malingering," where an individual has a recognizable purpose and manufactures symptoms to achieve his/her goal.

The term "malinger" is more specific than dissimulate. Whereas "dissimulate"

refers to a general act of hiding one's motives (Webster, 1988), the term "malinger" refers more specifically to the act of feigning incapacitation in order to avoid work (Webster, 1988). The word "malinger" comes from the French word, "malingre", which is often translated to mean "sickly, puny, frail, or ailing" (Webster, 1988).

Just as some individuals may be tempted to fake a mental illness, other individuals may be tempted to fake cognitive impairment. Just as those who receive a diagnosis of "mentally ill" may receive certain benefits and privileges, those identified as cognitively impaired may also receive benefits, such as social security disability insurance, workman's compensation insurance, and/or monetary compensation as mandated by a court order.

The problem of malingering on tests of psychopathology has received a large amount of attention. Much of this research deals with the MMPI and MMPI-2 (Hathaway & McKinley, 1951; Butcher, Dahlstrom, et al., 1989) and its "fake" scale. Research has investigated the ability of psychologists to use the MMPI and MMPI-2 to detect and differentiate among faking both psychopathology and perfect mental health (Lim & Butcher, 1996). Numerous studies have demonstrated this scale's usefulness for detecting dissimulation (Cassisi, 1992; Austin, 1992; Viglione, 1995).

Attempts to detect malingering on psychological tests in general have had mixed results. This is partly the result of an unclear distinction between dissimulation and psychopathology. Some researchers have argued that malingering itself is evidence of psychopathology (Lezak, 1995).

The problem of malingering in neuropsychological assessments has involved the interpretation of already existing tests as well as the creation of several new scales. Until

recently, the detection of malingering has relied on the clinician's ability to detect discrepant test results and complaints (Lezak, 1995).

Just as some may be motivated to malinger on tests of psychopathology or cerebral dysfunction, others may be motivated to simulate a learning disability (LD). Federal law (Americans with Disabilities Act) mandates that persons receiving the diagnosis of a physical or mental disability are entitled to additional services and benefits. The diagnosis of Learning Disability qualifies as just such a disability (Parry, 1992).

This research project examined the applicability of already existing tests for malingering to the assessment of learning characteristics. More specifically, neuropsychological tests of malingering may be useful due to the many similarities between neuropsychological and psycho-educational tests. Are those tests commonly used to detect malingering in neuropsychological assessments applicable to learning disability assessments?

Learning Disabilities and The Law

A resurgence of interest since the 1970s (Hughes & Smith, 1990) has produced a great deal of literature on the subject of learning disabilities. New federal laws mandating improved services for disabled students have produced demands for more information, and this new information has, in turn, influenced policies. Frank and Wade (1993) point out that under various laws and federal mandates such as The Americans with Disabilities Act (ADA) (1992) and the Rehabilitation Act of 1973, all postsecondary institutions receiving federal aid are required to "make such modifications to [their] academic requirements as are necessary to ensure that such requirements do not

discriminate or have the effect of discriminating, on the basis of a handicap, against a qualified handicapped applicant or student." The protection of these two Acts is extended to persons with learning disabilities. Public Law 94-142 defines learning disabilities in the following way:

> "A disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. Such disorders include such conditions such as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. Such term does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, of emotional disturbance, or environmental, cultural, or economic disadvantage. (PL 94-142)"

The American Bar Association (ABA) has adopted a formal definition of learning disabilities that is virtually identical to the original federal definition (PL 94-142), with one important addition. The ABA adds that learning disabilities are " . . .manifested by a significant discrepancy between intellectual ability and actual achievement . . .(Parry, 1992)."

Postsecondary institutions are expected to make appropriate adjustments to assist these learning disabled students, but these adjustments need not be made if the

adjustments effectively eliminate essential course content. For example, a student with a mathematics learning disability who declares a major in mathematics does not need to be exempted from course requirements, but the same school may relieve a clarinet major of his/her mathematics requirement. It is up to the institution to determine the distinction between compromising the effectiveness of the course material and assisting a student with a disability.

Court Cases

Disabled persons have fought a long and hard battle to gain access to educational services formerly reserved for students without disabilities. Their struggles have sometimes led to a court decision that more clearly defines the often-vague legislation surrounding this access.

In the *United States v. Board of Trustees of the University of Alabama* (1990), a federal court found that the University of Alabama could not limit the benefits of federal legislation to only students registered in degree granting programs. This court decision extended the availability of disabled student services to students in nondegree-granting programs, postgraduate students, and temporary students. The court found that the University must provide auxiliary services to disabled students, regardless of their enrollment status.

Other court decisions have influenced the ways in which post-secondary institutions change their testing policies. For example, in *Wynne v. Tufts University School of Medicine* (1990), a medical student who had failed several classes claimed that the cause for these academic failures was dyslexia. The Plaintiff attempted to take a

reduced course load, but was unsuccessful in his efforts to do so. In addition, the medical school refused him the opportunity to be tested with an alternate testing method (e.g., oral examinations instead of essay examinations). The Plaintiff was, however, given a tutor and an opportunity to take the classes a second time. After failing to pass all of his classes for the second time, he was dismissed from the medical school. This suit claimed that the methods by which he was tested did not allow him the opportunity to demonstrate his knowledge of the material. A district court found for the medical school, agreeing with the medical school's argument that a major shift in the testing format constituted a major alteration to the medical school's program. Upon appeal, however, the appellate court found that the district court was incorrect to grant the medical school the power to insist that a dyslexic student be evaluated in the one way which is most difficult for students with dyslexia, a written examination. Upon return, the district court found for the student.

In *Campbell A. Dinsmore v. Charles C. Pugh and the Regents of the University of California* (1989; cited in Brinckerhoff, Shaw, & McGuire, 1992), the two sides reached a settlement out of court. A student originally filed the suit after a professor refused to give him additional time on mathematics exams. The student had adequate documentation of dyslexia, and the full support of the University's Disabled Student's Program, but the professor still refused the student additional time. The professor claimed that to allow a student additional time for an exam was unfair to the rest of the students. The settlement reached out of court required the University to develop a comprehensive policy for academically accommodating disabled students, and the professor was required to pay monetary damages to the student. Brinkerhoff, Shaw, and

McGuire (1992) noted that this settlement is important in that it disallows faculty members the opportunity to dictate to which special services a disabled student is entitled. Instructors were advised to follow the recommendations of an Academic Accommodations Policy Board. While there was no court decision, the settlement agrees with the *Wynne v. Tufts University School of Medicine* (1990) decision in that changing a testing format does not, in most cases dramatically compromise the academic integrity or constitute a major shift in the course content or curriculum. Yet, many questions remain.

The growing numbers of learning disabled students requesting special services has forced some universities to rethink these policies. School administrators are increasingly concerned with the large and steadily growing numbers of students requesting LD services. Boston University, a school with an outstanding reputation for learning disability services recently began to require that all students requesting LD services present proof of a recent assessment and diagnosis (Lewin, 1996). Officials concerned about preserving the academic integrity of educational programs are forcing a major reevaluation of learning disabilities in the college-aged population. Their uneasiness and skepticism is due in part to the relatively small amount of research currently conducted on college students with learning disabilities.

School administrators, such as those at Boston University, recognize that there are numerous learning disabled college students, and have recently begun to examine the interventions used for those students. This newfound interest in the topic of learning disabilities has answered many questions, but raised many more. Some of these questions have to do with both the ability of individuals to simulate a learning disability,

and the ability of testing professionals to detect this malingering.

The revision of many school learning disability policies may be due in part to the concern that some students may be simulating or exaggerating a learning deficit in an effort to access these services. To date, I could find no publications detailing the ways in which this sort of simulation may be detected.

The majority of college students who are self-referred to educational testing centers for learning disability assessments are considered eligible for special educational services (Mellard & Byrne, 1993). The prospect of these benefits can motivate some to fake a cognitive deficit or disorder to receive these services. For example, they may get to take untimed tests, or to avoid essay exams. In other cases, they may be declared exempt from taking certain courses (e.g., they may be exempt from fulfilling a foreign language or math requirement). Most universities have learning disability centers, which provide tutoring, and other assistance to their learning disabled students. These benefits may motivate some to simulate the condition.

Learning Disabilities

Learning disabilities are found in equal proportions across socioeconomic groups, different cultures, and are believed to remain relatively persistent throughout the lifespan. Some sources estimate the prevalence of learning disabilities to be anywhere from two to twenty percent. The large differences between studies are due to several factors, including methods and the definition of learning disability used in the study. The National Committee on Learning Disabilities (1987) estimates that the prevalence of learning disabilities in this country is between five to ten percent. Obrzut & Boliek

(1991) reported that the prevalence is about ten to fifteen percent. Of learning disabled students, males outnumber females three to one (McLesky, 1992). In addition, approximately 15% of LD students exhibit behavior problems (McLesky, 1992).

The proper identification of learning disabled students is a task of the utmost importance. Students who are not properly identified may experience a host of academic and professional difficulties that may lead to emotional problems. Kahn (1988) found that learning disabled college and junior college students exhibited many socio-emotional difficulties, which have a strong impact on academic performance. Their difficulties included poor time management, difficulty completing tasks, poor psycho-perceptual skills, and poor study skills. These problems result in difficulty understanding graphics, difficulty keeping one's place on an examination, difficulty with standardized answer sheets, and word reversals. Some of the emotional problems experienced by learning disabled students are presumed to be related to their cognitive difficulties. Because of this, their emotional difficulties do not prevent them from receiving a LD diagnosis. Conversely, more severe emotional problems are often seen as the underlying factor in learning disabilities. These factors often require testing prior to the diagnosis of a learning disability.

The majority of LD students are identified as such during their early elementary school years. In one study, a sample of 790 students revealed that the identification of learning disabilities peaked at grade one, abated slightly during grades two and three, and then gradually declined. Approximately 75% of learning disabled students were identified as such by the conclusion of grade five. Severe learning disabilities may be diagnosed earlier, and more subtle learning disabilities are identifiable as the educational

process continues (McLesky, 1992).

The diagnosis of a learning disability is a comprehensive process. Johnson and Blalock (1987) describe their learning disability assessment for adults as composed of four stages. In the first stage, the client discusses his/her difficulties, concerns, and reasons for wanting an assessment. In the second stage, the diagnostician collects a history of the client and their difficulties. This is an opportunity for the client to describe their perceptions of his/her problems. Stage three is composed of objective testing, and in stage four the diagnostician writes down his/her clinical observations of the client throughout the assessment process.

The Association on Higher Education and Disability (AHEAD- Ad Hoc Committee on Learning Disabilities, 1996) recommends that any learning disability diagnosis be established and verified using the following guidelines: Testing performed by a qualified professional must be comprehensive. Information should be gathered on academic, social, developmental, and medical history. The psycho-educational or neuropsychological testing should include aptitude, achievement, and information processing domains. The testing must also have taken place within the past three years, should include a specific diagnosis, and provide actual scores from technically sound tests. In addition, the final report should include specific recommendations and provide the rationale behind these recommendations.

Learning Disabilities and Neuropsychology

The applicability of neuropsychological assessments for use in the detection of learning disabilities rests on the assumption that learning disabilities stem from cerebral

dysfunction. Indeed, the National Joint Committee for Learning Disabilities defines learning disabilities as a "generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning or mathematical abilities. These abilities are intrinsic to the individual and are presumed to be due to central nervous system dysfunction (Hammill, Leigh, McNutt, & Larsem, 1981)." Speculation as to the etiology of learning disabilities is disputed. Explanations range from chemical imbalances, to developmental abnormalities, to structural damage. With regard to the latter two, the exact type and location of this cerebral dysfunction is disputed. A review by Bigler (1992) on the neurobiology and neuropsychology of learning disorders discusses much of the literature on these topics. Post-mortem studies on the brains of learning disabled persons have revealed mixed, but interesting observations. For language based learning disorders, left hemisphere irregularities are often present, but the location of these irregularities is widespread and extremely heterogeneous. The same is true of magnetic resonance imaging (MRI) and electroencephalograph (EEG) studies on the active brains of learning disabled persons. The MRI and EEG studies on language-based LD subjects reveal abnormal patterns of activity in language associated regions of the brain (e.g., areas in and surrounding the left temporal and parietal lobes). However, these same studies also reveal irregularities in other areas previously thought to be minimally related to language-based learning disorders (e.g., anterior frontal and occipital regions). While there appears to be a structural basis to many learning disorders, these connections are far from clear.

One common theme in the neuropsychological study of learning disabilities is that the disabilities are not thought due to a lack of intelligence. Rather, a learning disability

is attributed to difficulties in processing selected kinds of stimuli. For example, dyslexic individuals can fully comprehend auditory instructions, but have great difficulty with written text. The information processing difficulty is related to an impairment in processing written language, not an inability to understand language. For other learning disabilities, such as mathematical learning, the processing difficulty may stem from impaired mental manipulation and concentration abilities.

It is this difficulty in information processing that neuropsychological testing attempts to address. Neuropsychological assessment batteries such as the Halstead-Reitan (Reitan & Wolfson, 1993) and Luria-Nebraska (Golden, Purisch, & Hammeke, 1985) have sometimes been used in conjunction with psycho-educational tests to detect and diagnose specific learning disabilities. Rourke (1982) utilized several neuropsychological assessments to separate learning disabled children into four categories according to the results of neuropsychological testing. Obrzut and Boliek (1991), emphasized that the use of neuropsychological tests for the investigation of learning disabilities can provide information on sensory acuity, sensory recognition and perceptual functions, motor functioning, attention, memory, psycholinguistic functioning, as well as commonly assessed dimensions such as cognitive aptitude and achievement.

Using neuropsychological tests, Felton, Naylor, and Wood (1990) found that, when IQ and socioeconomic status were controlled, only rapid naming, phonologic awareness, and non-word reading discriminated significantly between learning disabled and non-disabled participants. A similar conclusion was reached by Horn, O'Donnell, and Leicht (1988), who found that when IQ and several demographic variables are controlled, the assessment differences as measured by neuropsychological tests are

restricted to language processes in adults with language-based learning disabilities.

Bigler (1992) argued that because neuropsychological testing provides the most sensitive and complete methods for assessing brain dysfunction in adults, these same neuropsychological assessment techniques should be the primary method for identifying adults with learning disabilities.

The Woodcock Johnson Psycho-Educational Test Battery

In a national survey of practicing school psychologists, Stinnett (1994) found that the Woodcock-Johnson Psycho-Educational Battery (WJ, WJ-R)(Woodcock, 1977, 1989/1990) is among the tests most frequently used for assessing aptitude and achievement. Wendler and Roid (1984) determined that, in addition to being a popular test among educational system assessors, the WJ is also a cost-effective approach to the diagnosis and investigation of learning disabilities.

One asset of the WJ, is its ability to compare a student's aptitude to the student's achievements in four academic areas. If there are significant discrepancies between aptitude and achievement in reading, mathematics, knowledge, and written language areas, with achievement being much lower than aptitude, there may be a basis for diagnosing a learning disability. This method of identifying aptitude-achievement discrepancies is a key factor in the identification of LD students.

There are many tests available for identifying the aptitude-achievement discrepancy, but the WJ has two features in particular that have made it one of the nation's most popular tests: its standardization sample and its age range.

The Woodcock-Johnson has a clear advantage over many other psycho-

educational tests in that both subtests of cognitive ability and the tests of achievement were normed using the same sample. The results from these tests are of the utmost importance when testing for a learning disability, and the fact that they are directly comparable gives the WJ a clear advantage for both clinical and research applications. In addition, the normative sample of the Woodcock-Johnson ranges from the beginning of the educational process in kindergarten, to the 65+ age group. This test's usefulness with a college-age population has been demonstrated in a number of different studies (Hall, 1984; Morris, 1990; Dalke, 1988).

McGrew and Pehl (1988) found the WJ to be a good predictor of school achievement. When compared to the WISC-R, the WJ was an equally good or better predictor of both achievement and ability after a six-year period. The WJ interest subtests were not predictive of future achievement.

A study by Walsh, Lowenthal, and Thompson (1989) found that the WJ highlights this aptitude-achievement difference. It should also be noted that while the authors support the use of the WJ to find this discrepancy, they did have criticisms of the test. Most notably, over three different comparisons only 68% of the previously identified learning disabled students were diagnosed as having a learning disability. The authors used this finding to suggest that the WJ be used in conjunction with other testing methods to effectively and accurately identify learning disabled students.

One of the most common criticisms of the Woodcock-Johnson tests of cognitive ability is that there is more of a focus on verbal than on performance intelligence abilities. In fact, Woodcock (1978) reported that the Cognitive Abilities scale of the WJ correlated higher with the verbal section of the WISC-R than with the performance section of the

WISC-R. This discrepancy is one of the reasons why the Wechsler intelligence tests are so often paired with the Woodcock-Johnson Psycho-Educational Battery.

A study by Buchanan and Wolf (1986) utilized the WJ in conjunction with the WAIS-R to examine the learning and cognitive characteristics of 33 adults referred for learning disability assessments. They found that many of the typical learning problems found in childhood persist into adulthood. One of the main differences is that children identified in schools as having learning problems may be spared some of the psychological distress that comes with not receiving professional assistance. Many of the adults in the study were never diagnosed with a learning disability, and instead saw themselves as poorly motivated, easily distracted, emotionally labile, lacking self-concept, and generally unorganized. The study also suggested that using only the verbal and performance discrepancies in the WAIS-R was insufficient for detecting learning disabilities.

Merrell (1990) found that the WJ effectively discriminated between learning disabled and low achieving students. Learning disabled and low achieving students' subtest scores differ significantly in all subtests but reasoning. In this study, the participants were given the cognitive abilities and achievement tests. On the cognitive aptitude tests, the two groups differed most on the cognitive and memory scales. Among the achievement tests, the two groups showed the most dramatic differences on the skills and reading tests.

Dalke (1988) examined 72 first-year college students, half with and half without a diagnosed learning disability, to determine if the WJ was useful in identifying learning disabled college students. Dalke emphasized the consistency of learning difficulties for

the learning disabled group throughout the lifespan at a level that remains consistently lower than those of the control peer group. This study found significant differences between LD and non-learning disabled students on all clusters relating to cognitive abilities and academic achievement. There were no significant differences found between the LD and control groups for the interest measurements in the WJ.

To investigate the link between head injuries and learning difficulties, Tupper (1990) conducted one of the first studies utilizing the WJ with a head-injured population. In this study, 39 adults with a mean coma duration of 9.8 days were assessed upon entry into an outpatient treatment program. The Trail Making Tests, the Halstead Category Test, and the WJ were administered to all of the subjects. The Trail Making Test A correlated negatively and significantly with reasoning, perceptual speed, and overall cognitive clusters on the cognitive ability cluster of the WJ. Trails B correlated negatively and significantly with the verbal, reasoning, perceptual speed, and memory subscales of the cognitive ability cluster, as well as overall cognitive ability. The WJ tests in this study revealed several similarities between head injured and learning disabled individuals. General attentional, information processing, and perceptual speed deficits are among the most common similarities between these two groups. Tupper describes these difficulties as problems with visual perceptual speed and new learning deficits. Tupper's description of these problems is interesting in that he never directly addresses learning disabilities, although his description of head injured patients is strikingly similar to the difficulties experienced by persons with many kinds of learning disabilities.

In another effort to document the psycho-educational effects of brain lesions, Aram and Ekelman (1988) tested brain-injured children using the WJ. These children

reported several of the same educational difficulties as LD students, such as spelling, attentional, spatial perceptual, and memory difficulties. The WJ test results confirmed the children's complaints.

While the Woodcock-Johnson is currently among the most popular assessment tools used for the evaluation of learning characteristics, it is not without criticism. One important criticism of this test battery is that it may not adequately differentiate between low achieving and learning disabled students (Gajar, Salvia, Gajria, & Salvia 1989; Olivarez, Palmer, & Guillemard, 1992; Warner, Schumaker, Alley, & Deshler, 1980). This is troublesome, given that this battery is commonly used to differentiate between these two groups.

In addition, it is important to note that the constructs of aptitude and achievement are not entirely separate. Aptitude influences achievement. Because of this, achievement may be influenced by the same factors that influence aptitude test scores, such as socioeconomic status, ethnicity, and access to resources (Kaufman, 1990). Individuals may, because of environmental factors, evidence aptitude and achievement scores which are not reflections of their true abilities. Therefore, conclusions from testing should be tempered in light of potential environmental influences. Still, despite these criticisms, the Woodcock-Johnson remains a very popular tool in the assessment of learning characteristics.

Neuropsychological Efforts to Detect Malingering

While batteries of neuropsychological tests may assist in identifying differences between intact and damaged cognitive functioning, their utility for detecting faking has

not been established (Lezak, 1995). Most individuals with some degree of impairment are unique in the exact kind of dysfunction that they display, and this makes it difficult for practitioners to discern between idiosyncratic and fraudulent test results. Inconsistencies in test performance are often used to detect malingering. For example, a patient may perform well on the WAIS-R subtests of comprehension, similarities, and arithmetic (Wechsler, 1981), but score very low in its vocabulary and digit span subtests. Studies utilizing the Halstead-Reitan Neuropsychological Test Battery's (HRNB) numerous subtests have come to differing conclusions regarding the utility of this method (Rogers, 1997). Many authors agree that the use of discriminant function analyses to identify inconsistent performance is far better than a qualitative evaluation of the testing data. One broad conclusion from several of these studies is that normal individuals instructed to fake neuropsychological deficits produce more measurable deficits in the areas of sensory-perceptual and motor functioning, as well as on measures of auditory attention and discrimination. Compare this to individuals with verifiable brain injury, who generally display greater impairment on indices of abstract reasoning and set-shifting (Doerr & Carlin, 1991; Heaton, Smith, Lehman, & Vogt, 1978; Goebel, 1993; Rogers, 1997). A review of the literature (Nies & Sweet, 1994) concluded that detecting malingering in this way is very difficult, although sometimes possible.

A common criticism of research on neuropsychological assessment malingering is that there are no published studies on verifiable malingerers. Individuals rarely admit to malingering, and as such the "malingerers" used in controlled studies are presumed to be equivalent to actual malingerers. The validity of this assumption is not known.

Dissimulation Measures:

Several attempts to create scales specifically to detect malingering have been based on a number of findings in studies comparing malingerers and non-malingerers. However, these scales have not been applied to other areas of testing. While the use of certain tests such as the WAIS-R (Wechsler, 1981) and/or the Woodcock-Johnson (Woodcock & Johnson, 1977) are commonly used in both neuropsychological and learning disability test batteries, I have found no published study that tested the applicability of specific neuropsychological dissimulation measures to the learning disability testing situation.

The Rey Memorization of Fifteen-Item Test (Rey, 1964) requires participants to memorize fifteen different items, and then recreate the items following a short delay. This test presents itself as being very difficult, when in fact it is quite easy. Because most brain damaged patients can remember the majority of the items (Bernard & Fowler, 1990; Paul et al., 1992; Goldberg & Miller, 1986), anyone failing to recall these items can be suspected of malingering, especially if there is contradictory information (e.g., remembering to get to the assessment appointment on time, remembering the date, etc.). This task can be presented using either a 15-item memorization task, or a 16-item memorization task (Paul, Franzen, Cohen, & Fremouw, 1992). When attempting to dissimulate on a test, naive malingerers tend to overestimate the deficits of memory impaired individuals. Bernard (1990) found that naive dissimulators performed worse than persons with verified brain injury when testing the ability of the Rey Memorization of Fifteen-Item Test to discriminate between malingerers and non-malingerers,.

Another neuropsychological test used to detect malingering is Rey's (1941) Dot

Counting tasks, which asks the patient to count various numbers of dots. In the first trial, the practitioner asks the patient to count dots randomly placed on a blank index card. The more dots present on the stimulus cards, the longer the patient should need to count them. An only slightly more complicated version of this test adds an additional trial of dot counting. In the second trial, the numbers of dots and the order of these numbers remain essentially the same, but on this second trial the dots are grouped (e.g., squares, diamonds, etc.). Times for ungrouped dots should be slower than the times for counting the grouped dots. If either the error rate or time for counting the grouped dots exceeds that for ungrouped stimulus dots, the patient's cooperation is suspect.

Hiscock and Hiscock (1989) developed another malingering test, which requires the patient to memorize a five digit number displayed on a card, and the patient is later asked to identify this number on a card containing two five-digit numbers. The test is given in three different trials, each with longer delays. Between trials, the clinician remarks to the person taking the test that he/she did a good job, and that the test will be made somewhat harder by increasing the delay period (Prigatano & Amin, 1993). Because there is no evidence that these delays actually increase the error rate (Lezak, 1995), such increases raise the possibility of dissimulation. Indeed, a large increase suggests that the patient is not cooperating.

On such forced choice tests, those who have sustained severe brain damage may not correctly answer all of the questions. A patient taking the test with impaired memory ability should, at worst, get half of the questions wrong. A subject under examination that gets less than half of the questions wrong may be due to chance, but if this pattern persists over multiple administrations, it might be inferred that the patient is intentionally

picking the wrong answers.

The Rey Memorization of Fifteen-Item Test and the Forced-Choice test both address short-term memory, which has also been implicated in mathematics learning disabilities. Cohen (1983) described mathematics learning disabilities as "short-term memory difficulties," where memory of arbitrary symbols is needed but not available. Individuals with short-term memory difficulties may indeed perform worse on the Fifteen-Item Test than normal subjects. However, the Fifteen Item Test's utility lies in that the suggested cutoff score for determining malingering norms are sufficiently low as to rule out a majority of false positives (Millis & Kler, 1995).

Hypotheses:

The current analogue study explores the relationship between the performance on measures designed to assess learning characteristics and dissimulation measures. The impact of instructional sets is an additional feature. Participants were asked to simulate a learning disability as well as asked to take a variety of cognitive and achievement measures. The following hypotheses were investigated:

1. It is extremely difficult to simulate a learning disability, and individuals who are instructed to dissimulate on an assessment of learning characteristics will not be able to demonstrate the required aptitude-achievement discrepancy. When presented with this task, participants asked to simulate a learning disability will score lower (i.e., at a statistically significant .05 level) on:
    A. Subtests of the Woodcock-Johnson Revised:

a. Cognitive measures: Numbers Reversed, Picture Vocabulary, and Visual Matching,

b. Achievement measures: Word Attack, Applied Problems and Quantitative Concepts;

B. The AMNART;

C. Specific tests of dissimulation:

a. Rey Fifteen-Item Test,

b. Rey Dot Counting Tests, grouped and ungrouped, and

c. Forced-Choice digit recognition test (Hiscock & Hiscock, 1989)

in comparison to participants asked to do their best on these tests.

2. The task of faking a learning disability is a difficult task, because it requires the recognition of different tests, as well as a specific pattern in the results. Individuals will not be able to show a pattern of test results similar to that of a "learning disability." In this study, participants will not show a discrepancy between academic achievement and intellectual ability. That is, participants will not differ by more than one standard deviation in their estimated cognitive ability standard scores and achievement standard scores.

3. Tests designed to detect malingering are more effective when presented at the beginning of a test battery. On an exploratory basis, it was hypothesized that an order effect exists. Participants who are asked to simulate a learning disability first and are then asked to do their best will perform differently than will participants who are asked to do their best and then asked to simulate a learning disability.

It is important to note that the order of test administration may impact the dissimulation tests in this study. Arnett, Hammeke, and Schwartz (1995) suggested that simple tests such as the ones used in this study which were designed to detect malingering may be most useful when positioned at the beginning of a series of tests. These dissimulation sensitive tasks perform their function in part due to a ceiling effect. Individuals undergoing psychological testing may be more sensitive to the easy nature of these dissimulation tasks once they have completed more difficult tasks. Dissimulation measures are useful in that they do not measure a full range of abilities, but unfortunately an individual with experience in any number of psychological tests may be sensitive to these dissimulation tests with increasing exposure to other tasks.

For this reason, it is important to note that the test order may make a difference in the results of this study. Those initially instructed to "perform their best" may be sensitized to the difficulty of the several tests and alter their testing performance to appear more believable. More specifically, they will perform more like those in the control condition; they will perform "better" on these tests and therefore be more difficult to detect as malingerers.

Methods:

Cognitive Measure

To provide an estimate of intellectual ability, all participants will be given the American New Adult Reading Test (AMNART) (Schwartz & Saffran, 1987; cited in Grober & Sliwinski, 1991). This is a modification of Nelson's (1982) Adult Reading Test (NART), based on the hypothesis that intelligence can be estimated by examining

highly overlearned skills which are relatively resistant to brain damage and which correlate highly with IQ. This test scores a patient on his/her correct pronunciation of a list of progressively more difficult words. Because the NART was normed on a British sample, some words that appear on the test may appear more or less regularly for American users. To remedy, the AMNART was developed using the same principles as the NART, but substituted words more commonly used by North Americans for some of the original test items. The AMNART correlates substantially with verbal and full-scale WAIS IQ measures (.72), and moderately with performance IQ (.51) (Schwartz and Saffran, 1987; cited in Grober & Sliwinski, 1991). Grober and Sliwinski (1991) report that the test-retest reliability for this test is a high .93.

Procedure

For this study, 40 undergraduate participants were assigned to both the malingering and non-malingering instructions. The participants were individually assessed on two occasions by different clinicians, with at least one week between testing sessions. Participants were initially randomly assigned (via a coin flip) to either the malingering or non-malingering conditions.

Because the presence of those with bonafide learning disabilities could confound the results, all will be asked the following questions:

1. Have you ever needed a tutor to help you with your schoolwork?
2. Have you ever been placed in a remedial class?
3. Have you ever been diagnosed with a learning disability?

The answer of "yes" to any of these questions will disqualify a subject from participation

in the study.

The participants received written instructions prior to the assessment describing their task. Non-malingerers were asked to give their "best performance" on the tests. Those instructed to "malinger" were told to respond as if they wanted to receive the diagnosis of a "learning disability" in order to obtain special academic privileges.

The following instructions (adapted from Arnett, Hammeke, & Schwartz, 1995) were given to individuals before testing in the dissimulation condition:

> "You have been having trouble in school and have decided to undergo testing for a learning disability. These tests are very important because they will in part determine if and how much assistance you will receive in your classes. It is possible that if your learning disability is severe enough, you will be exempted from some course requirements. You want to cooperate fully with the tester, but at the same time you want to make sure the tests indicate a learning disability so you can receive as much academic assistance as possible. Be careful not to appear too obvious in your attempts, for if you are suspected of faking, your requests for academic assistance may be dismissed.
>
> "Your instructions are to fake a learning disability. This is a difficult task, so in order for you to be the best possible faker here is some information about learning disabilities and learning disability testing you should find helpful: A learning disability is a disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written language. People with learning disabilities can have difficulties performing tasks such

listening, thinking, speaking, reading, writing, spelling, or doing mathematical calculations. Learning disability diagnoses are not given to people who have learning problems which are mostly due to visual problems, hearing problems, or motor handicaps, mental retardation, emotional disturbance, or environmental, cultural, or economic disadvantage. A learning disability is said to be present when there is a large enough difference between someone's intellectual *ability* and his/her academic *achievement*.

"So in other words, to be diagnosed with a learning disability, you should try to make the tests show a large difference between your intellectual ability, and your academic achievement. Your achievement should be much lower than your intellectual ability.

Those are all the instructions you get. The rest is up to you. Good luck!"

Participants were administered the Quantitative Concepts, Word Attack, Applied Problems, Picture Vocabulary, Numbers Reversed, and Visual Matching subscales from the Woodcock-Johnson psycho-educational test; the AMNART, the Rey Fifteen-Item Memorization test, the Rey Dot Counting (grouped and ungrouped) task, and the Forced-Choice test.

After the dissimulation condition, the participants were asked to rate their efforts on a 5-point Likert scale. The participants were asked to rate the effort they put into their learning disability "performance" (5=tried very hard, 1=did not try at all). The participants were also asked if they understood the dissimulation instructions ("yes" or "no").

The results were coded and submitted for statistical analysis by a repeated measures ANOVA. Potential order effects were examined in each of the hypotheses using this analysis.

Results:

Forty participants took part in this study. Twenty females and twenty males successfully completed two different testing sessions. Data analyses were divided into three sections. In the first, the hypotheses concerning aptitude and achievement differences were evaluated. In the second part of the analyses, hypotheses regarding the tests of malingering and their effectiveness were examined.

Aptitude and Achievement and Learning Disability Faking:

This study hypothesized that participants' scores on the tests of achievement and aptitude would be lower in the malingering condition than they would be in the control condition. However, this study also hypothesized that participants would not be able to fake a learning disability, as defined by a one standard-deviation difference between aptitude and achievement tests, with tests of achievement being one standard-deviation lower than tests of aptitude.

For these analyses, all scores were converted to z-scores, based on the age adjusted norms in the WJ-R manual. As predicted, participants' scores in the malingering condition (M=-.83)were judged to be more deficient than those in the control condition (M=.42). The results of a repeated measures ANOVA indicated that this is a statistically significant difference, $F(1, 38)=60.08$, $p<.001$.

Interestingly, participants were able to show a discrepancy between aptitude and achievement (see table 1).

(Table 1) Mean z-scores for the tests of cognitive ability and the tests of achievement

AVERAGE OF Z-SCORES	Aptitude tests	Achievement tests
Malingering condition	-1.12	-.54
Do your best condition	.44	.41

The results of a repeated measures ANOVA indicated that this is a significant interaction, $F(1, 38)=17.84$, $p<001$.

It is important to note that while participants were able to show a significant difference between tests of aptitude and tests of cognitive ability, the difference was on the order of approximately one-half standard-deviation *in the opposite direction* (see figure 1). This difference, while significant, was less than one standard-deviation. Thus, while the null-hypothesis that participants can not show a difference between tests of achievement and cognitive ability is rejected, this sample did not show a large enough difference between tests of achievement and tests of cognitive ability to indicate that participants could fake a learning disability.

Also of note is that no significant order effects were observed in this analysis, $F(1, 38)=.487$, $p=.489$.

(Table 2) *Descriptive Statistics for the tests from the cognitive portion of the WJ-R, irrespective of order*

TEST (COGNITIVE): Mean, SD	Control	Malingering
Numbers Reversed:	.39, .96	-.83, .99
Visual Matching	.62, .80	-1.93, 1.77
Picture Vocabulary	.31, .66	-.61, 1.33

(Table 3*) Descriptive statistics for the tests from the achievement portion of the WJ-R, irrespective of order*

TEST (ACHIEVMENT) Mean, SD	Control	Malingering
Applied Problems	.19, .66	-.67, 1.45
Quantitative Concepts	.44, .67	-.63, 1.41
Word Attack	.59, .71	-.31, .77

As a group, this sample of participants was unable to show a cognitive test – achievement test split with tests of achievement being lower than cognitive tests. Even individually, there were no individuals out of the forty who were able to show a discrepancy where an average of the tests of achievement was one or more standard deviations *lower* than an average of the tests of cognitive ability.

A repeated measures ANOVA revealed that on the AMNART, participants' scores in the malingering and control condition were significantly discrepant, resulting in significantly different estimated verbal IQ scores $F(1, 38)=17.37$, $p<.001$ (table 4). There was no order effect observed for this measure, $F(1, 38)=2.32$, $p=.633$.

(Table 4) *Descriptive statistics for the AMNART, irrespective of order*

AMNART: mean, SD	Control	Malingering
AMNART	113.41, 5.26	108.98, 6.59

Tests of Malingering:

This study hypothesized that tests of malingering are sensitive to faking on learning disability assessments. The results of the following statistical analyses would infer that the null hypothesis can be rejected. Participants scored lower on tests of malingering when asked to fake a learning disability than they did when asked to perform to the best of their ability. In addition, this study hypothesized that tests of malingering are more sensitive when placed at the beginning of a battery of tests, and thus better able to detect malingering. The results of statistical analyses on the three tests of malingering are as follows:

Rey Fifteen Item Test (FIT):

After the Rey Fifteen-item test stimulus card was presented, the subject was asked to reproduce the stimuli on the card in the same fashion they were presented. The test

was scored by counting the errors the participant made when reproducing the card. Errors on the Rey FIT were measured in two ways, the first counted the number of errors the subjects made. This approach counts the number of symbols that were not in their proper place. For example, many subjects had all of the symbols present on the paper, but they reversed the order of the rows; if the original stimulus was 123, many participants reproduced the stimulus as *321*. The results of a repeated measures ANOVA showed that this test does indeed discriminate between malingerers and controls when the score on the FIT is measured as a function of how many symbols were not correctly placed in their proper row and column, $F(1, 38)=68.64$, $p<.001$. There was no order effect observed on this approach to scoring this test, $F(1, 38)=2.14$, $p=.152$.

The second approach to scoring the FIT counted the number of symbols the subject remembered and placed on the paper, regardless of the placement of these symbols. For example, if the original stimulus row was 123, and the subject responded *321*, the subject would receive credit for three correct responses. The results of a repeated measures ANOVA showed that while this method of scoring the FIT was not was effective as counting the number of errors, it still produces a significant effect, $F(1, 38)=13.35$, $p=.001$. There was no order effect observed on this test $F(1, 38)=.10$, $p=.750$.

(Table 5) *Descriptive statistics for the Rey 15-item test, irrespective of order*

Rey-FIT: Mean, SD	Control	Malingering
Number of items recalled	14.53, 1.20	13.10, 2.21
Number of items absent and/or in the wrong position	.73, 1.28	6.80, 4.71

Forced Choice Test (FCT):

The Forced Choice Test was scored as the total number of errors made across all three trials individually, as well as the sum total of errors across all three trials. A repeated measures ANOVA revealed that this test discriminated between subjects in the malingering and control section in Trial A, $F(1, 38)=18.46$, $p<.001$; Trial B, $F(1, 38)=38.38$, $p<.001$; Trial C, $F(1, 38)=41.08$, $p<.001$. The FCT was particularly powerful across all three trials, $F(1, 38)=35.09$, $p<.001$. There was no order effect observed on Trial A, $F(1, 38)=.54$, $p=467$; Trial B, $F(1, 38)=.47$, $p=.495$; Trial C, $F(1, 38)=1.19$, $p=.283$; or the sum total of errors across all three trials, $F(1, 38)=1.08$, $p=.306$.

(Table 6) *Descriptive statistics for the Forced Choice Test, irrespective of order*

Forced Choice Test (FCT): Mean, SD	Control	Malingering
Errors, Trial A	0.00, 0.00	2.78, 4.06
Errors, Trial B	0.00, 0.00	4.50, 4.56
Errors, Trial C	.03, .16	5.03, 4.92
Total Errors across all 3 trials	.03, .16	12.03, 12.80

Rey Dot Counting Test (DCT):

The Dot Counting Test was administered as a series of individual cards, with a

number of dots presented on each card. The participants were instructed to count the dots as quickly as possible. For each card, both the participant's response (the number of dots they counted) and the amount of time it took them to indicate their response was recorded. The Dot Counting Test was scored several ways in an attempt to determine which way is the most powerful discriminator between conditions. A polynomial contrast revealed that as Rey hypothesized, there is a strong linear trend in the time it takes to count the number of dots on each card. The amount of time it took participants to count the number of dots increased in a linear function as the amount of dots increased. This effect is true for both the ungrouped dots portion of the test $F(1, 39)=394.11$, $p<.001$, as well as the grouped dots portion of the test $F(1, 39)=164.73$, $p<.001$.

The DCT was scored by whether or not participants increased the amount of time it took to count the dots. On both the grouped and ungrouped conditions, subjects were recorded as displaying an increase if the amount of time it took them to count the dots from card one through to card six time increased or stayed the same. For example, if a participant's response times in seconds for counting the dots on cards one through six were 2, 3, 5, 5, 5, and 9, respectively, the subject was recorded as displaying a consistency in response time across the six trials. By contrast, if a subject's response times were 1, 3, 4, 3, 6, and 8, the subject was recorded as not displaying consistency in response times across the six trials. Results of a repeated measures ANOVA indicated that though there is a strong linear trend in the amount of time it takes to count the dots on the cards, there were enough participants who displayed non-linear patterns in their response time as to make the difference between malingering and control groups non-significant in the ungrouped dots portion of the test $F(1, 38)=2.99$, $p=.092$, as well as the

grouped dots portion of the DCT, $F(1, 38)=.81$, $p=.374$. In this case, whether or not participants displayed a consistent increase in the amount of time it took to count the dots as the number of dots increased was not predictive of group membership in the malingering or control condition.

By contrast, if the DCT is scored by the number of errors in counting, the DCT becomes a significant discriminator. There is a significant difference in the number of errors between the malingering and control groups on the grouped dots section of the DCT, $F(1, 38)=6.42$, $p=.016$. In addition, there is a significant difference in the number of errors made when one compares the malingering and control groups on the ungrouped dots section of the DCT, $F(1, 38)=27.80$, $p<.001$. Interestingly, there is an interaction when looking at the order effect when counting the number of errors on the ungrouped dots, $F(1, 38)=8.83$, $p=.005$. Participants made almost twice as many errors on the ungrouped section of the DCT if they were in the "malingering first" condition ($M=3.00$, $SD=1.84$), than if they were in the "do your best first" condition ($M=1.65$, $SD=.99$). When the errors across both trials were added and used as a single variable, there was a significant main effect, $F(1, 38)=19.49$, $p<.001$, and interaction here as well $F(1, 38)=19.49$, $p=.016$. Again, participants in the "malingering first" condition made more errors ($M=4.40$, $SD=3.09$) than did participants in the "do your best first" condition ($M=2.50$, $SD=1.82$).

(Table 7) *Descriptive statistics for the Dot Counting Test, irrespective of order*

Dot Counting Test: Mean, SD	Control	Malingering
Ungrouped dot counting errors	.95, 1.22	2.33, 1.61
Grouped dot counting errors	.40, .90	1.10, 1.43
Total dot counting errors	1.35, 1.88	3.45, 2.68

(Table 8) *Order effect for Dot Counting Test, errors in the ungrouped condition*

Means and Standard Deviations	Malingering First	Malingering Second
Ungrouped dot counting errors, Malingering (Mean; SD)	3.00; 1.39	1.65; .99
Ungrouped dot counting errors, Control (Mean; SD)	.85; 1.04	1.05; 1.40

Sex Effects:

There were no sex effects observed for any of the measurements.

Post-Hoc Analysis:

An effort was made to determine if the participants could be grouped into the malingering and control conditions on the basis of their performance on the tests of malingering. To evaluate this, a discriminant function analysis was used. The results of this indicated that these participants could indeed be classified into their respective conditions on the basis of their scores from the malingering tests, Wilks's lambda = .49, χ^2 (5, N=80) = 54.47, p<.001. 86.3% of the cases were correctly classified.

Discussion:

Hypothesis number one predicted that it is extremely difficult to fake a learning disability, and that participants in this study would not be able to simulate a learning disability. The results of the more specific aspects of this hypothesis are as follows:

Hypotheses 1A and 1B predicted that if individuals are asked to fake a learning disability, they will score lower on tests of aptitude and achievement than they would have scored if they were giving their "best" effort. The data supported this hypothesis. Participants in this study performed worse on tests of aptitude and achievement when asked to fake a learning disability than they did when asked to do "their best." Data analysis showed that AMNART scores were sensitive to this manipulation as well. Participants scored lower on the AMNART in the malingering condition than they did in the control condition; participants' estimated Verbal IQs were lower in the malingering condition than they were in the control condition.

Hypothesis 1C predicted that neuropsychological tests of malingering are

sensitive to faking on tests of learning characteristics. Participants performed worse on each of the tests of malingering when asked to fake a learning disability than they did when asked to perform at their "best." These instruments are sensitive enough to detect this form of malingering. A more specific breakdown of the three malingering tests are as follows:

The Rey-Fifteen Item Test (FIT) is a sensitive detector of malingering, whether it is scored as a function of how many items are present, or how many items are present and in their correct position. The FIT is a more sensitive indicator of malingering when it is scored by how many items are present *and* are in their correct position.

The Forced Choice Test (FCT) is also a sensitive malingering instrument when it comes to detecting if individuals are trying to fake a learning disability. The FCT can be scored according to the number of errors in each individual trial, or the sum total of errors across trials. Each of these methods were useful in discriminating between malingerers and individuals who are doing their best, though it appeared that the most powerful indicator on this test is the number of errors on the third trial, or trial "C." The finding that individuals showed the biggest difference in FCT trial "C" scores between the malingering and control conditions supports the test's implicit assumption that increased errors are an indication of malingering. Successive trials "A," "B," and "C" are not progressively more difficult, and should not result in increasing amounts of errors, despite the test administrator's instructions which state that the test becomes more challenging.

Results from the analyses on the Rey Dot Counting Test revealed that this test, too, was a sensitive indicator of malingering on tests of learning disabilities. However,

this test did not appear to function as was originally hypothesized. There is a very strong linear function in this test - that is, the amount of time it took participants to count dots increased linearly as the amount of dots increased linearly. This was a strong trend regardless of whether or not people were malingering or not. However, there was no reliable or significant difference between malingerers and controls based on whether or not the time it took for them to count the dots increased consistently. Because it was not possible to statistically differentiate between the malingering and control condition based on the progressive linear nature of response time, the DCT should not be used as a measure of whether individuals are malingering based upon if their scores are linear.

When the DCT is scored based upon the number of errors individuals make when counting the number of dots present, it becomes a useful test for discriminating between malingerers and individuals trying to do their best. When using this test as part of a battery to assess learning characteristics, individuals who are trying to malinger make significantly more errors than do individuals who are trying to do their best. The number of errors in the grouped portion of the DTC, the ungrouped portion of the DCT, as well as the cumulative number of errors from the grouped and ungrouped conditions were significantly higher in individuals who were trying to fake a learning disability. Of these three scores, the number of errors in the ungrouped section was the most useful indicator of malingering.

Hypothesis 2 predicted that the task of producing test results with a more than one standard deviation difference between aptitude and achievement, with achievement being lower than aptitude, would be too difficult to complete. This hypothesis was supported

by the data. In most states, the difference between aptitude and achievement required for the diagnosis of a learning disability is one to one and a half standard deviations. In this study, while participants were able to show a statistically significant difference between aptitude and achievement, this difference was approximately .5 standard deviations in the *opposite* direction. The participants showed a tendency to score lower on tests of aptitude than tests of achievement.

It is important to note that this study did not attempt to answer the question of whether or not it is possible to fake a specific learning disability (i.e., Reading Disorder or Mathematics Disorder). This was not possible given the limited amount of time in which to conduct the assessments and thus the limitations on the kinds of tests given. Rather than investigate whether or not it was possible to fake a specific learning disability, this study attempted to answer the more general question of whether or not it was possible for participants to detect the difference between tests of aptitude and tests of achievement without having these identified beforehand. These results indicated that these participants' "strategy" was the opposite of what it should have been.

It is important to note that the .5 standard deviation difference between aptitude and achievement was a mean difference, and the range of scores was variable. Some individuals displayed a pattern of test results where achievement was less than .5 standard deviations lower than aptitude; they were less successful at showing a "learning disability." Others displayed a pattern of test results where achievement was greater than .5 standard deviations lower than aptitude; they were more successful at showing a "learning disability."

Participants in this study were unable to fake a learning disability. *Even though*

they were instructed on how they might do so, they were still unable to show this pattern of scores.

Hypothesis 3 predicted that the tests of malingering would be differentially effective depending on an individual's prior exposure to these and the other tests of aptitude and achievement. Interestingly, with one exception, there does not appear to be an order effect to these three tests of malingering. Though it may make intuitive sense that by exposing individuals undergoing testing to "real" tests, it will sensitize them to the notion that tests of malingering seem "easy"; this does not appear to be the case. With the exception of the number of errors made on the ungrouped section of the DCT, there was no order effect exhibited anywhere in the testing. A possible explanation for this finding is that the participants' responses to the ungrouped portion of the DCT was the final part of the portion of the test battery devoted to tests of malingering. It is possible that participants had, by that point in the test battery, gained enough experience with the malingering tests that the DCT became more transparent. With this single exception, participants do not score differently on malingering tests if they have had exposure to other tests. This result is contrary to the suggestion from Arnett, Hammeke, and Schwartz (1995) that tests of malingering may be more useful at the beginning of a test battery.

Consequently, the results of this study support the conclusion that tests commonly used to detect faking in neuropsychological assessment are useful in assessments of learning characteristics. They may be helpful for detecting a poor attempt at learning disability dissimulation. Though no participants in this study were able to show a sufficiently large discrepancy between aptitude tests and tests of achievement, the tests of

malingering are helpful for detecting an *attempt* at deception, and may prove helpful for more sophisticated malingerers. In addition, these tests are useful throughout a testing battery.

There has been some discussion in the literature that many malingering studies are flawed by virtue of their participants. For example, many published studies on the ability of individuals to malinger neuropsychological deficits have been criticized because the samples from these studies come from a population of college students. A sample of college students does not accurately reflect the population of individuals requesting neuropsychological assessment for cognitive difficulties, and these criticisms are valid in this respect. This study's sample, however, comes from the population it seeks to understand. College students may be more or less sophisticated dissimulators than other populations when it comes to simulating cognitive deficits. However, when investigating the likelihood that college students can fake a learning disability, it is best to draw a sample from a population of college students. This study's findings apply directly to the population from which it was drawn.

On a more qualitative note, test administrators noted that most individuals in the malingering condition had little or no perceptible strategy. The few that displayed perceivable strategies were grouped into two general categories: the "wrong answerers" and the "reversers."

"Wrong answerers" appeared to go out of their way to give an incorrect response. For example, when shown a picture of a fork, they might have said "utensil," and thus gotten the question wrong. Errors such as this were not uncommon, and displayed a

tendency of these participants to give a wrong response at all costs, even if an incorrect response required more sophisticated knowledge than the correct response they were trying not to answer. For example, when shown a picture of a fork and asked to name the object, he/she may have responded with "utensil" and claimed no further understanding of the picture

"Reversers" usually reversed phonemes and letters on the AMNART and Word Attack subtest of the WJ-R. In addition, they often reversed numbers on the Visual Matching and Numbers Reversed portions of the WJ-R. These individuals appear to subscribe to the common view that learning disabilities primarily consist of difficulties in reading and writing that stem from reversing and switching letters on a regular basis. This strategy appeared to be somewhat analogous to the popular, though somewhat misguided perception of dyslexia as a disorder primarily involving letter and number switching.

It is important to note that these two groups were derived from the assessors' impressions of the participants' strategies. These were clinical impressions and were not included in the data analysis.

Future Research:

While this study has answered some very interesting questions as to the nature of learning disability malingering as well as the application of neuropsychological tests of malingering to learning characteristic assessments, it is by no means a comprehensive study. Future research on this issue may pursue the two general areas of "tests of malingering" and "aptitude and achievement tests."

Future research on tests of malingering may involve the adaptation of existing tests of malingering to a learning characteristics assessment. For example, a forced choice test might be created to investigate spelling or reading. A test such as this may present the participant with two choices, and the participant would pick the correct spelling, or the correct mathematics answer. Another potential research question would be to investigate the popular conception of learning disabilities, such as dyslexia, as disorders of word and number reversals. A test might be constructed that would exploit this popular misconception. An additional research idea would be to provide participants with more explicit training on how to fake a learning disability.

Future research on tests of aptitude and achievement might pursue the "fakeability" of different tests commonly used in learning characteristic assessments. In this study, the Word Attack and Visual Matching subtests were differentially sensitive to the malingering instructions. Participants' z-scores were lower on the Visual Matching subtest than they did on the Word Attack subtest during the malingering condition. A very time-consuming but potentially comprehensive study would involve the administration of an entire learning characteristics assessment to malingerers and non-malingerers.

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