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Use of the Kaufman Brief Intelligence Test - Second Edition as an embedded measure of malingering in a college population

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INTRODUCTION

Overview

In today's economic decline, there is a growing pressure for the reform of healthcare. Clinicians need to treat only those individuals who have true symptoms and problems. Individuals who exaggerate or feigning cognitive impairments are straining an already over-burdened healthcare system (Haines & Norris, 2001). A collaborative approach in which a clinician gathers information from an interview, behavior observations, collateral information, and assessments is recommended to detect if an individual is attempting to malinger. Assessments are especially important if a clinician should be called to court. Over two-thirds of neuropsychologists use at least one specialized technique for detecting malingering (Slick, Tan, Strauss, & Hultsch, 2004).

This research has primarily focused on finding if the Kaufman Brief Intelligence Test- Second Edition (KBIT-2) would be able to have a cut-off score that would help determine if an individual is malingering. The KBIT-2 was not designed to measure malingering; however, the purpose of this study is to determine if there is any promise.

Malingering

Defining Malingering

A malingerer is a person who lies or exaggerates a memory deficit (or any other problem) and is seeking a secondary gain. Malingering can be described as the premeditated production of artificial or grossly exaggerated physical or psychological symptoms motivated by external incentives such as obtaining financial compensation, evading military duty, avoiding work, obtaining drugs, or evading criminal persecution (Lynch, 2004). The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) suggests that malingering should be examined if

a combination of the following is observed in an individual: a) there is considerable discrepancy between claimed stress or disability and objective examination findings; b) there is a lack of cooperation found in examination and in treatment, c) presences of antisocial personality disorder or d) the individual is referred by a lawyer for examination (American Psychiatric Association, 2000).

A differential diagnosis should be made between malingering and other disorders such as conversion disorders (300.11), factitious disorders (300.19), and somatoform disorders (300.81). The difference between a factitious disorder and malingering is that the symptoms in factitious disorders are consciously produced and appears to be in pursuit of an internal goal, i.e. assuming the sick role. The only goal of a person with a factitious disorder is to gain the position of being in the sick role and is not consciously motivated by an external incentive. Individuals with a factitious disorder may jeopardize their own well being at a high personal cost just to assume the sick role. Individuals are unaware of the motivation behind the factitious behavior (Cassar, Hales, Longhurst, & Weiss, 1996). However, with individuals who are malingering, the goal is apparent and they can "stop" the symptoms when the symptoms are no longer useful to them.

Those who malinger are distinguished from those who have somatoform disorders in that individuals with a somatoform disorders have symptoms that are involuntary. Somatoform disorders may include: somatization disorder, undifferentiated somatoform disorder, pain disorder, hypochondrias, body dysmorphic disorder, somatoform disorder not otherwise specified, and conversion disorder. There may be three main reasons that individuals would unconsciously have conversion symptoms.

The first reason would be to escape from an unpleasant situation. The second reason could include feelings of guilt and an unconscious form of punishment to one's self. The third reason may be unconsciously hoping for money or compensation. In the case of malingering, symptoms are intentionally produced for external incentives like financial compensation, avoidance of duty, evasion of criminal prosecution, or obtaining drugs.

Therefore, the DSM-IV-TR advises that malingering should be considered whenever there is a medical and legal context, there is a lack of cooperation on the part of individuals, the distress reported exceeds the observed disability, or when antisocial personality disorder is present (APA, 2000). Malingering is not classified as a psychiatric disorder but is included in "Other Conditions That May Be a Focus of Clinical Attention."

Individuals who have been diagnosed with an antisocial personality disorder have associated with individuals who have and have not used the insanity plea. Gacono, Meloy, Sheppard, Speth and Roske (1995) studied criminal defendants acquitted of criminal offenses by reason of insanity. Those individuals who admitted to feigning psychiatric disorders during their trial were more likely to have antisocial personality disorder. Base rates of malingered psychiatric symptoms are unknown but an estimated 28-45% of those assessed for psychological complaints in criminal settings are presenting false symptoms (Graue, Berry, Clark, Sollman, Cardi, Hopkins, & Werline, 2007). A more recent review of psychopathy and malingering of psychiatric disorders in criminal defendants has shown that antisocial personality disorder may be a poor discriminator of malingerers from those believed to be responding honestly. The use of

deception can be a vital clinical characteristic of psychopathy; thus, it is logical that the idea that psychopathy and malingering are associated. However, there was a high percentage (greater than 40%) of individuals diagnosed with Antisocial Personality Disorder that did not score above accepted cut-offs in malingering assessments for suspecting malingering (Kucharski, Duncan, Egan, & Falkenbach, 2006). Antisocial Personality Disorder was a poor discriminator of malingerers from individuals who were believed to be responding honestly. Overall, not all individuals diagnosed with Antisocial Personality Disorder are believed to have malingered and not all of those who have been suspected of malingering, have Antisocial Personality Disorder.

When trying to differentiate and distinguish from the disorders above, there are number of different assessments that a clinician may use. It is important to describe the possible ways that an individual may respond to these assessments so that a clinician may make the most educated decision about the results. Rogers (1984) describes six possible types of responding to different psychological assessments. *Malingering* is described as being the conscious fabrication or gross exaggeration of physical or psychological symptoms. Another way to respond is *defensively*, which is when the individual attempts to conceal or minimize physical or psychological symptoms in order to attain a goal i. e. being discharged from a hospital or obtaining a job. A third type is *irrelevant* responding in which an individual makes no effort to answer in an appropriate manner and does not try his or her best. This may be due to lack of motivation to take the evaluation or trying to hurry through the evaluation. *Random* responding occurs frequently on forced choice or multiple-choice tests, and the individual exhibits a chance performance pattern. A fifth type of responding is *hybrid*

responding where there is a mixture of two or more of the above patterns are observed. A final type of responding is *honest* responding. This is what most evaluators and clinicians want from individuals (Rogers, 1984). Honest responses are described as being nonrandom, appropriate, and consistent.

Before Rogers, evaluators tended to have a dichotomous view of test performances: valid or invalid. Rogers' concept has evolved and been improved upon by Frederick (2002). Frederick described that there were four possible levels of responding to evaluations compared to Rogers' six levels. The first level is *compliant* in which an individual makes a good effort to respond correctly. The next level is *inconsistent* which the individual makes insufficient effort to respond correctly. The third level is *irrelevant* which is when the individual has no intention to respond correctly or incorrectly. A final level suggested is the *suppressed* level. On this level, the individual makes a strong effort to respond incorrectly or is malingering (Frederick, 2002).

It is important to keep in mind the different ways that an individual may respond to an assessment or evaluation, as well as understanding what each test is designed to measure. There is no single test of malingering that is considered "the best." There are, however, several available measures, which vary in time of administration, format, theoretical approach, and technique. The information resulting from these psychological assessments of malingering cannot be substantiated through comparison to any external standards. The accuracy with which tests can detect symptom distortion has become an issue to the law and psychology (Farkas, Rosenfeld, Robbins, & Van Gorp, 2006). Assessment of malingering is essential component of criminal forensic

evaluations. If a clinician fails to detect an individual who malingers a psychiatric disorder, the individual may escape criminal prosecution or result in shorter sentences. Also, if a diagnosis of malingering is given when it is not appropriate, an individual may not receive appropriate care and may be denied a mental health defense that would have been available if not perceived as malingering (Farkas et al., 2006). The exact base rates of individuals who are malingering psychiatric symptoms are unknown, although estimates range from 28-45% of these individuals that are assessed for psychological complaints in criminal settings are presenting false symptoms (Graue et al., 2007). When studying base rates, it is important to note that evaluators who use standard measures that are not specifically designed to detect malingering may tend to be unsuccessful in detecting malingering in adults (Lynch, 2004).

Common Malingering Symptoms

The most commonly encountered malingered symptoms include but are not limited to the following: cognitive loss, sensory loss, motor loss, emotional disruption, seizures, and mental retardation/intellectually challenged (Franzen & Iverson, 1998; Graue et al., 2007). These symptoms may be the most commonly faked because there is an attempt to represent real disorders. Individuals who attempt to mimic disorders from symptoms and behaviors seen through media and movies are quite different from individuals who have researched the disorder or have seen others with the disorder they are trying to mimic. Sensory loss may include blindness, trouble seeing or hearing. Motor loss may include psychomotor slowing, weakness, or total paralysis. Emotional disruption includes depression, posttraumatic stress disorder (PTSD) and uncontrollable behavior like anger outbursts (Lynch, 2004).

Cognitive loss or neurocognitive deficit may include disorientation, amnesia, speech/language problems, and difficulty with concentration. Cognitive loss is the most commonly feigned symptom when the motives of the individual are in compensation-seeking circumstances. Individuals may respond slowly on timed tasks or deliberately provide incorrect answers. The base rate of individuals who use these two cognitive symptoms are estimated to be 41% (Graue et al., 2007). A majority of malingerers in a study by Tan, Slick, Strauss, & Hultsh (2002) reported feigning memory loss as their main strategy with slow response time as the next frequently used strategy. A slow response time may be a key element in timed tasks found in assessments. Therefore, individuals may respond incorrectly, appear to be distractible, or respond haphazardly. For timed tasks, malingerers usually cannot estimate the speed at which they should perform certain tasks because they do not know how slowly a truly impaired person would perform. Also, these individuals are unable to time themselves when attempting to complete the timed tasks (Van Gorp, Humphrey, Kalechstein, Brumm, McMullen, Stoddard, & Pachana, 1999). Overall, timed tasks are quite difficult for individuals to malinger.

Another area that clinicians should be concerned about in creating a diagnostic picture of potential malingerers is individuals who may act at a lower IQ level. Therefore, clinicians should be aware of the APA criteria for mental retardation when assessing individuals who may be malingering cognitive deficits, for it will aid in differential diagnoses. According to the DSM-IV-TR (APA, 2000), mental retardation has an onset prior to the age of 18, and is characterized by having a significantly below average general intelligence. An individual diagnosed with mental retardation has

multiple deficits in adaptive functioning, which include how effectively individuals cope with daily life demands and how well they meet the standards of personal independence. Personal independence varies in context depending on education, personality characteristics, motivation, social and vocational opportunities and other mental disorders and general medical conditions that may coexist with mental retardation.

Mental retardation is found on a continuum and has varying degrees of severity ranging from mild to severe. However, the majority of individuals who are diagnosed with mental retardation are diagnosed in the mild range (IQ of 50-70). At this level of mental retardation, individuals are able to develop social and communication skills during the preschool years, have minimal impairment in sensorimotors, and are not distinguishable from children without mental retardation until later years. By their late teenage years, individuals are able to acquire academic skills at a sixth-grade level and by their adult years are able to achieve social and vocational skills (APA, 2000). These individuals are able to support themselves but may need assistance or supervision, especially when under unusual stress (economic or social). Thus, it is crucial to remember that mental retardation is on a continuum when trying to discover if someone is malingering or is performing in a mental retardation level. Individuals may pretend to be slower than they truly are to get out of a number of situations especially when it comes to criminal cases and the death penalty.

In 2002, there was a U.S. Supreme Court decision that affected the motivation of possible malingerers. In Atkins v. Virginia, 536 U. S. 304, the court concluded that Atkins was mildly mentally retarded based on an IQ of 59 and had multiple deficits in

adaptive functioning. However, the jury sentenced Atkins to death after being found guilty of abduction, armed robbery, and capital murder. The case was appealed due to Atkins being diagnosed as having mild mental retardation. The lawyers argued that the execution of mentally retarded defendants was precluded by the Eighth Amendment's prohibition of cruel and unusual punishment. Thus, many individuals who are prosecuted with a crime have a motivation to malinger mental retardation as to escape the death penalty.

Given the incentive and motivation to malinger, it is vital that clinicians be able to make an accurate diagnosis of whether an individual has a true mental disorder or is malingering. Studies have been used to test the reliability and validity of using malingering assessments on those that have met the criteria for mental retardation. The Minnesota Multiphasic Personality Inventory-Second Edition (MMPI-2) and the Structured Inventory of Malingered Symptomatology (SIMS) are two popular tests used for malingering that have not been evaluated in individuals diagnosed with mental retardation. However, other popular tests used for malingering, including the Test of Memory Malingering (TOMM) and the Structure Interview of Report Symptoms (SIRS), have been researched with individuals with mental retardation (Graue et al., 2007). Although the Kaufman Brief Intelligence Test –Second Edition (KBIT-2) has been researched with a population with mental retardation, previous research has not assessed its usefulness in detecting malingering. Thus, when assessing individuals who may be feigning lower cognitive abilities it is crucial to remember which tests have been used with individuals who have scored in the mental retardation range.

Motivations to Malinger

In psychiatric examinations, the assessment of effort and motivation is essential to establish psychiatric diagnoses. Most diagnoses depend on what an individual reports about his or her mental state. Feigning mental disorders is a common problem in criminal and civil compensation cases, so that an individual may escape or reduce incarceration time, gain monetary rewards, or escape the death penalty (Stevens, 2008). Most forensic settings have higher base rates of malingering; however, some clinical settings have seen an increase in compensation-seeking veterans who receive treatment or evaluations for PTSD (Frueh, Gold, & de Arellano, 1997).

The level of an individual's motivation during an assessment is crucial in selecting the psychological tests that measure mental abilities. These tests may be invalidated if the individual is not cooperating. Most psychological tests require good effort on behalf of the individual to yield valid results (Stevens, Friedel, Mehren, & Merten, 2008).

Youngjohn, Burrow, and Erdal (1995) speculated that almost half or all workers ' compensation claims may involve faked cognitive deficits. With these high rates, clinicians must consider that every client may not be completely honest about his or her condition and not be putting forth his or her best possible effort during the testing. Some individuals may also have access to information about how to exaggerate symptoms or are being deliberately coached about how to defeat malingering measures. At least three studies have found a positive correlation between the likelihood of malingering and financial incentive (Binder & Rohling, 1996; Frueh et al., 1997; Paniak et al., 2002).

If malingerers are able to perform convincingly on psychological measures, then truly accurate neuropsychological assessment becomes very difficult (Dunn, Shear, Howe, & Ris 2003). Lawyers who are interested in maximizing the claims of the client could provide a minimal set of generalized simulation strategies that could increase the possibility of using symptom exaggeration or feigning successfully (Cato, Brewster, Ryan, & Giuliano, 2002; Cassar, et al., 1996). Motivation and effort has been shown to have a pervasive effect on an individual's performance and would compromise the detection ability of malingering tests (Cato et al., 2002). In a recent study (Stevens et al., 2008), almost half, 44.6% of clients gave insufficient effort on assessments and the frequency of clients failing effort tests was independent of age, sex, referral source, and leading complaint. Effort accounted for 35% of the variance of performance in the domains of cognitive speed, memory, and intelligence. Therefore, there is a general and strong effect of effort on psychological test resulting from motivation. Motivation is vital to interpreting results of assessments and should be a considered factor.

Rates of Malingering

The rates of malingering among the population are not known with any precision. The current figures may be an underestimation as those who are successful in malingering are not able to be counted. Base rates were estimated due to 33, 531 annual cases seen by members of the American Board of Clinical Neuropsychology involving personal injury, disability, criminal, or medical matters. Probable malingering and symptom exaggeration was found for 29% of personal injury, 30% of disability, 19% of criminal, and 8% of medical cases. Diagnosis of malingering cases was based on multiple sources of evidence that included: a pattern of cognitive impairment that was

not in agreement with the condition (64%), scores below empirical cutoffs of forced choice tests (57%), discrepancies between records, self-report and observed behavior (56%), unlikely self-reported symptoms in interview (46%), improbable changes in test scores across repeated examinations (45%), and validity scales on objective personality tests (38%) (Mittenberg, Patton, Canyock, & Condit, 2002). This study was consistent with previous studies that involved base rates of malingering during mental health examinations (Rogers,1986).

Detection

There are four main sources of information that are vital in determining if an individual is malingering. The first source of information is discovered with a semi-structured interview that covers the individual's history. The assessment of malingering presents a difficult challenge for clinicians as the clinician-client relationship is based on the assumption that a client is in real need of treatment. Confronting an individual that may be malingering may be additionally difficult given a possible escalation of agitated behavior and slight potential for lawsuits of malpractice (Martinez v Lewis, 1998). The main purpose of an interview is to provide the clinician with information about the individual's credibility. Questions of creditability may arise due to inconsistencies or the manner in which information is given. One of the main ways to detect malingering is when the individuals' demeanor changes as they leave or enter the room (Rubenzer, 2005). If there are suspicions as to the creditability of the individual, the clinician should be aware of how he or she is phrasing the questions. Open-ended questions should be utilized first so that the individual is able to describe symptoms in their own words and then clinicians can ask more detailed questions to find if the

symptoms are typical or atypical. A popular belief by malingerers is that the more symptoms affirmed, the more likely they are perceived as being sick or impaired (Resnick, 1999). The second source of information should be collected from the clinician's observation of the individuals' behavior and manner. Malingering symptoms takes effort on the part of the individual and some individuals will become tired in longer interviews allowing for opportunities to make mistakes. The third source includes collateral information from family, friends, treatment providers like physicians, and witnesses to the trauma. This form of information is vital in assessing malingering and actual level of functioning. The fourth source of information comes from specialized psychological tests, which are discussed below. Specialized tests and assessments are important because it provides a structure, accountability, and effectiveness. Neither a clinician's judgment nor unstandardized test results will be able to be upheld in court cases as well as standardized tests. Over two-thirds of neuropsychologists use at least one specialized technique for detecting malingering in litigant assessment with the TOMM and the Rey 15 Item Test being the most frequently reported measures (Slick, et al., 2004).

Good Measures are Needed

Malingering has been around for centuries and in different situations. One of the first recorded cases was by the Roman physician Galen who reported two cases: an individual faking an injured knee to avoid a journey and one individual faking colic to avoid a public meeting. (Galan, 1941). Then, malingering was documented in the late 19th and early 20th century of the emergence of worker's compensation (Resnick, 1997). Malingering has also been documented during times of war. There are records that

indicate that the British sent pamphlets to German troops instructing them how to fake injury so that they would be able to obtain a military leave (LeBourgeois III, 2007). Other records document that at different times in the Soviet Union malingering was used to escape sanctions or coercion (Field, 1953).

Overall, there are three main societal problems those individuals who malinger cause. The productivity of an industry or military is reduced because those individuals are not there. The second problem that influences society is that disability, worker's compensation and insurance benefits are taken away from those who are in genuine need of it. It was estimated that malingering may cost insurance industry $150 billion yearly, increasing the cost of insurance by $1, 800 per family (Garriga, 2007). The third problem is that it takes the energy, time, and money (assessments) from health-care providers. Due to the growing pressure for the reform of health-care, it is more important than ever for clinicians to treat only those individuals who are having valid health problems.

Individuals who exaggerate or feigning cognitive impairments are straining an already over-burdened healthcare system (Haines & Norris, 2001). In situations in which individuals are being evaluated for disability pension or monetary reparation for damages that occur in accidents, the motivation to fabricate or exaggerate problems is obvious (Vagnini, Berry, Clark, & Jiang, 2008). Therefore, the need for accurate techniques of separating out individuals with true disorders from those who are malingering are necessary. These techniques become even more demanding when clinicians and other professionals are called into court cases.

Psychologists are increasingly asked to provide expert testimony in court cases involving accidents were traumatic brain injury (TBI) has occurred. In these cases, claims of mental illness and neuropsychological deficits are made and the psychologist has to decipher what is true and what is not. Psychologists are to conduct forensic evaluations of individuals who report these claims and make judgments as to the degree to which individuals' symptoms are genuine (Farkas et al., 2006). If the clinician is unsuccessful in discovering that individuals are faking the reported symptoms, then individuals may successfully avoid criminal prosecution. Also, individuals that successfully malinger, may also gain compensation and avoid all criminal and civil responsibilities. At the same time, a clinician must be careful not to mislabel an individual as malingering when in fact the individual has a true disorder or symptoms. There are adverse consequences of being labeled as a malingerer, such as denial of psychiatric or medical treatment, and a loss of defense in criminal cases that otherwise would have been available (e. g. not guilty by reason of insanity; Kucharski et al., 2006). Therefore, there is an increasing demand for effective diagnostic tools to identify individuals who may be malingering or enhancing their symptoms (Tan et al., 2002). In some cases, imaging techniques provide solid evidence of damage but are often inadequate in cases of mild impairment. Thus, expert testimony by clinicians is particularly important, especially in providing evidence in claims for financial compensation because it may be the only option (Cato et al., 2002).

Research has shown that subtle coaching can alter performance tests of malingering, increasing the chance of escaping detection. With non-forced choice assessments, the effects of coaching suggest that these assessments may be more robust

and individuals attempting to malinger are more likely to failure. Thus, with forced-choice assessments coaching may be more successful (Greub & Suhr, 2006). Investigation has indicated that internet search engines can easily identify information that compromises measures of malingering (Suhr & Gunstad, 2007). Therefore, a lawyer can research the method of assessment online and coach the client on how to successfully fool the assessment. An intelligent individual may also be able to discover how to successfully pass the assessment as well.

Since the internet is increasingly a source of information for those wanting to malinger and escape detection, test security may be in jeopardy. Using true measures of malingering may present a problem, especially with the availability of the internet. It is easier for coaching to occur when attorneys or lawyers learn the details of the measures designed to assess malingering. In addition, there is also the increased duration and cost of evaluations that need to be taken into account. If clinicians are unable to retain the reliability and validity of malingering measures, then new assessments are needed. The procedure to create a new measure is an expensive and time consuming process (Greiffenstien, Gola, & Baker, 1995). It would be quite useful if detection of malingering strategies were built into already existing tests.

Measures of Malingering

Measures

Psychologists typically rely upon multiple methods for assessing the probability of malingering or symptom exaggeration according to a survey of the American Board of Clinical Neuropsychology (Mittenberg et al., 2002). The primary challenge that evaluators face is that of detection. To identify an individual as malingering requires

ingenuity. Someone who is attempting or is successful at malingering will not admit to malingering. Therefore, evaluators have developed sophisticated measures of malingering. Most of the effective measures that detect genuine and malingering results tend to be time-consuming, expensive, and complex to administer/score. A useful assessment should address motivation and sensitivity to what is being measured (Lynch, 2004). Various methods that detect symptom distortions have been utilized, such as indices from standard neuropsychological tests (embedded measures) and results from specially developed techniques (true measures). True measures usually rely on forced-choice methodology like the Test of Memory Malingering (TOMM). The most popular malingering detection method in clinical practice is the forced-choice paradigm in which an individual has a 50% chance of accuracy. A number of forced-choice tests are available for use and vary slightly in terms of type of target stimulus, number of items, interval between stimulus and response (Greub & Suhr, 2006; Greve, Ord, Curtis, Bianchini, & Brennan, 2008).

True measures are measures that were specifically designed to detect insufficient effort during an evaluation of cognitive symptoms. A measure like the TOMM superficially appear difficult to the individual but are generally easy, even for individual with severe to moderate brain injury (Sweet, Malina, & Ecklund-Johnson, 2006). However, coaching individuals is easier for true measures because these measures only have one purpose. In the instructions of how to administer the TOMM, it cautions clinicians not to show the name of the test to the individual. In keeping the name of the test hidden, clinicians try prevent passing this test from those who have been coached on how to (Bauer & McCaffrey, 2006).

Embedded measures consist of validity indicators that are used for conventional neuropsychological measures. Most of these tests tend to be based on statistical techniques or the operating characteristics of test from which cutoffs can be derived. Example tests would include the California Verbal Learning Tests, the Wisconsin Card Sorting Test, the Wechsler Adult Intelligence Scale and the Wechsler Memory Scale-Third Edition (Sweet et al., 2006). The MMPI-2 is a test that measures malingering by assessing an individual's over-reporting of emotional or somatic symptoms.

There have been advances in the past twenty years in the validation of methods used for detecting malingerers. Most studies have focused on the development and validation of instruments and indices sensitive to feigning of neuropsychological impairment including the Rey 15- Word Recognition Tests (Rey, 1964), Rey 15-Item Memory Test (Rey, 1964), the Dot Counting Test (Rey, 1941), the Portland Digit Recognition Test (Binder, 1993), and the Attention/Concentration versus General Memory Index of the Wechsler memory Scale Revised (Mittenberg, Azrin, Millsaps, & Heilbronner, 1993). The main criticisms of these tests are that they have specificity but lack sensitivity in that the assessments detect strong malingering symptoms (Lynch, 2004).

The Rey Word Recognition Test is the only test mentioned above that has withstood legal challenge, questioning its validity and peer acceptance (Frederick, 2002). In a study by Nelson, Boone, Dueck, Wagener, Lu, & Grills (2003) eight measures were used to examine correspondence between effort tests. The relationships between the following tests were made: Rey 15-item, Rey Dot Counting Test, Rey Word Recognition Test, RAVLT recognition trial, Rey-Osterrieth Complex Figure Test

effort equation, Digit Span, Warrington Recognition Memory Test- Words, and "b" Test. Models with moderate correlations were observed with only two measures sharing more that 50% score variance (Digit Span and Dot Counting) (Nelson et al., 2003). According to this study, these measures are independent of each other and provide independent sources of information even though they are theoretically measuring the same thing. See Table 1 for a summary of the designed purposes of true and embedded measures of malingering.

Table 1

Summary of True and Embedded Measures of Malingering

Test Name	Purpose	Age	Test Time	Publication
SIMS	Screening measure of malingering to assess symptoms of both feigned psychopathology and cognitive function.	18 and over	10-15 minutes	2005
VIP	Evaluates and individual's motivation and effort during cognitive testing.	18-69	30 minutes	1997
SIRS	Detects malingering and other forms of feigning of psychological symptoms.	16-84	30-45 minutes	1986-1992
TOMM	Assist neuropsychologists in discriminating between bona fide memory impaired patients and malingerers.	18 and over	15 minutes	1996
KBIT-2	Brief measure of verbal and nonverbal intelligence.	4-90	15-30 minutes	1990-2004

CLVT-2	Obtain a detailed and comprehensive assessment of verbal learning and memory.	16-89	60 minutes (30 minutes for short form)	1983-2000
WCST	Measure of abstract reasoning among normal adult populations' and has increasing been employed as a clinical neuropsychological instrument.	6.5-89	20-30 minutes	1981-1993
WAIS-III	Assess intellectual of adults	16-89	60-90 minutes	1939-1997
MMPI-2	Assess number of the major patterns of personality and emotional disorders.	18 and over	90 minutes	1942-1990

True Measures

Test of Memory Malingering

The TOMM (Tombaugh, 1996) is an established measure of malingering in the evaluation of memory complaints. It is a forced-choice recognition task consisting of line drawings of common objects. It includes two learning trails and one optional retention trail, where participants make two-alternate forced-choice decisions to identify the objects they had seen previously (Tan et al., 2002). No incorrect choice is presented more than once throughout the measure. Thus, this test appears to have high specificity and positive prediction value. It also may be relatively impervious to neurological disorders and is not affect by variables such as age, education, and affective state (Tan et al., 2002). When interpreting results, scores below 45 (90% correct) on the retention trial suggest that participants have not performed to the best of their abilities. This assessment has been highly accurate in differentiating malingering individuals from

normal controls. Another positive attribute of the TOMM is that it has been shown to be unaffected by other mental disorders, mild intellectual impairment, and language disorders (Lynch, 2004). Also, the TOMM has previously been validated using individuals diagnosed with mental retardation. While the TOMM is successful with most populations, it should be noted that individuals with dementia appear to fail the TOMM. Overall, however, most genuinely impaired patients will perform above cutoffs (Tombaugh, 1997). Thus, it should be recommended that clinicians might use other assessments before the TOMM in cases where the individual is suspected of malingering symptoms of dementia. Another positive attribute of this assessment is that the TOMM is a unique measure in which the test instructors and an individual's responses can be handled with little or nonverbal interaction. Overall, the TOMM requires about 15-30 minutes to administer the three trials. (Graue et al., 2007).

Structured Inventory of Malingered Symptomatology

The SIMS is a self-report inventory and assesses a wide range of cognitive and affective complaints, whereas the TOMM is a presented memory test. An individual who complains of psychological distress might not necessarily feign memory impairment, thus the SIMS would be a more appropriate test than the TOMM (Stevens et al., 2008). The SIMS is a paper-pencil, self-report scale that indicates symptom exaggeration. It contains 75 dichotomous items that describe a variety of symptoms at a fourth grade reading level. Some of the symptoms are extremely unlikely to occur in real disorders but seem plausible to people with a tendency for over-reporting symptoms. Participants are classified as probably malingering or probably not malingering according to empirically derived cut-off values. A score greater than

sixteen has been recommended for interpretation for the possibility of malingering. It also contains the Low Intelligence scale to detect feigned intellectual deficits (Graue et al., 2007). A criticism of the SIMS is that the assessment only provides cutoff scores and cannot quantify the degree of faking. A recent study found that the SIMS total scores below the cutoff scores accurately identified 100% of the individuals who were not faking. Therefore, the low scores provide strong evidence to rule out malingering. Clinicians would be able to conclude that the individual is unlikely to be feigning symptoms and does not need further evaluation (Lewis, Simcox, & Berry, 2002). However, the high scores are more ambiguous. Another study found that higher SIM scores are produced by individuals who are malingering and those who are accurately reporting symptoms of psychopathology or emotional distress. Thus, individuals who score above the cutoff require further investigation to reach a correct determination of response validity (Edens, Otto, & Dwyer, 1999; Edens, Poythress, & Watkins-Clay, 2007).

Validity Indicator Profile

The purpose of the Validity Indicator Profile (VIP) is to evaluate an individual's motivation and effort during cognitive testing. It is useful in identifying when the results of cognitive or neuropsychological testing may be invalid. It is not recommended for individuals with severe cognitive impairment or who have a history of mental retardation. The VIP has two subtests: 100-item nonverbal subtest and a 78-item verbal subtest. The nonverbal subtest is a series of simple to complex matrix problems with a forced choice response paradigm. It takes about thirty minutes to administer. The verbal subtest contains of a series of target words that vary on levels of difficulty and

takes approximately twenty minutes to administer. An individual must choose the word that is closest in meaning to the target word. There is no hand scoring available because there are a number of complex calculations required, thus it is computer scored. Both or one subtest may be administered to the suspected individual.

The results of this measure reflect either complainant responding, inconsistent responding, irrelevant responding or suppressed responding (malingering) which is similar to the levels of responding by Frederick (2002). The structure of the measure is quite complex. Therefore, it may be quite difficult for individuals to try to defeat this measure with or without coaching (Lynch, 2004). A main criticism of the VIP is that the measurement needs further validation studies as the original validation sample was small. Reliability needs to be investigated more thoroughly before using a sole instrument of malingering (Mental Measurement Yearbook, 2004).

Structure Interview of Report Symptoms

The Structure Interview of Report Symptoms (SIRS) is an instrument that was specifically designed for the detection of malingering using an interview format. It may be used to differentiate malingered schizophrenia and mood disorders from genuine disorders. SIRS has also had success investigating possible malingerers of PTSD (Franklin & Thompson, 2005). It has a total of 13 scores: eight primary scales and five supplementary scales. This assessment is designed to detect thirteen response styles that are associated with feigning. Scoring can be quite difficult and is made easier by computerized scoring. This allows for classification of results as definite feigning, probable feigning, or honest. There is also identification of inconsistent and other problematic response styles. Malingering should be suspected if three or more scales are

above the cut-off scores. It has been shown to be consistently accurate in detection of malingering of psychiatric symptoms using a variety of different research paradigms (Kucharski et al., 2006). SIRS may be more sensitive to attempts to feign psychosis than attempts to feign other disorders like PTSD or depression (Edens et al., 2007; MMY, 2004).

Embedded Measures

California Verbal Learning Test-Second Edition

The California Verbal Learning Test-Second Edition (CLVT-II) is a measure of strategies and processes involved in learning and remembering verbal information. There are three forms of the assessment. The standard and alternate forms consist of two lists made up of 16 words each from four categories. The short form version consists of nine words from three categories and is used with more severe cognitive dysfunction (MMY, 2004). The CLVT has been used in a number of studies as an embedded measure of malingering (Millis, Putnam, Adams, & Ricker, 1995; Trueblood, 1994). These studies propose possible cutoff scores and different judgment strategies for these tests. In a study by Ashendorf, O'Bryant, and McCaffrey (2003), researchers found that the CVLT strategies have potential clinical effectiveness in detecting malingering in older adults. Those that test below the cut-off scores may be suspected of malingering.

Wisconsin Card Sorting Test

The Wisconsin Card Sorting Test (WCST) was developed as a measure of abstract reasoning and ability to shift cognitive strategies when faced with changing stimuli. It consists of four stimulus cards and two sets of 64 response cards that depict

four shapes, four colors, and four numbers. The scores yield information that help clinicians understand how well a person conceptualizes the problem of the card sort, like how efficiently they learn and how flexible the individual shifts strategies to solve the problem. It is one of the most commonly used assessments in neuropsychological research and clinical practice to assess executive functioning (Greve, & Bianchini, 2002; MMY, 2004).

The WCST has been used in a number of studies as an embedded measure of malingering as well (Bernard, McGrath, & Houston, 1996; Greve & Bianchhini, 2002; Suhr & Boyer, 1999). However, in a study by Ashendorf et al. (2003), researchers found that the current WCST strategies offer limited usefulness for the detection of malingering in older adults.

Wechsler Adult Intelligence Scale-Third Edition

The Wechsler Adult Intelligence Scale-Third Edition (WAIS-III: Wechsler, 1997) was designed to assess the intellectual ability of adults. It consists of fourteen subtests that yield two sets of summary scores. First there are Verbal, Performance, and Full Scale scores. Then there are four index scales which include: Verbal Comprehension, Perceptual Organization, Working Memory, and Processing Speed. The scores are reliable enough to be used in all selected age ranges and the validity evidence gives confidence that the test scores measure those intellectual constructs that it claims to measure (MMY, 2004).

The WAIS-III is frequently used in mental retardation evaluations and has strong psychometric characteristics. The Full Scale Intelligence Quotient (FSIQ) of less than an IQ of 70 is included in the mental retardation range. More criteria are necessary

to be met to assign a diagnosis of mental retardation, such as an individual's history and assessment of adaptative functioning. In a 2007 study, Graue discovered that the WAIS-III was relatively ineffective at discriminating individuals feigning mental retardation and those with true mental retardation. Therefore, the WAIS-III may not be as effective as described in the past.

Minnesota Multiphasic Personality Inventory-Second Edition

The Minnesota Multiphasic Personality Inventory-Second Edition (MMPI-2) consists of 567 true/false questions contributing to nine validity scales, ten clinical scales, and multiple supplementary scales. The purpose of this measure is to assess a number of the major patterns of personality and emotional disorders. This assessment is able to detect inconsistent responding, exaggeration/feigning, and defensiveness. The indices use multiple ways to detect these types of responses of general over-reporting of symptoms, reporting stereotypic but false symptoms, or endorsing unusual symptoms.

The Infrequency (F) scale was developed to detect deviant ways of responding to test items as "normal" individuals who are not psychiatric do not endorse the items. High scores on the F scale may indicate symptom exaggeration or severe psychological disturbance. Another scale used to supplement the F scale in identifying infrequent responding is called the Infrequency-Psychopathology (*Fp*). It was developed to discriminate feigned from genuine psychopathology. T-scores over 100 indicate exaggeration. The Correction (K) Scale was developed as a subtle index of attempts by clients to deny psychopathology and to present themselves in a negative or positive light. It is inversely related to malingering. The F-K index identifies a tendency to exaggerate symptoms relative to a tendency to deny them by subtracting the raw score

on the K scale from the raw score on the F scale. These three scales have been shown to have good validity indices for detecting exaggerate response biases. Mean reported cutoff scores across studies were T scores of 106 or more for the F scale, T scores of 96 or more for the *Fp* scale and a difference score of 15.6 or more for the F-K index (Farkas et al., 2006; Walters, White, & Greene, 1988). The Cannot Say (?) Scale represents the number of omitted items, which may reflect carelessness, avoidance of admitting undesirable things without directly lying, or indecisiveness. The Variable Response Inconsistency (VRIN) Scale consists of 67 item response pairs with opposite or similar content. Every time an individual answers a pair inconsistently, a point is added to the score on the VRIN scale. A high F-scale and a low or moderate VRIN scale may indicate an individual who as has the intention of appearing more disturbed than what he or she is. The True Response Inconsistency (TRIN) Scale identifies and individual who responds inconsistently to items by giving true responses to items indiscriminately or by giving false responses indiscriminately. Lower TRIN scale scores indicate a tendency to give false responses indiscriminately. The Dissimulation scale (Ds) reflect erroneous stereotypes of mental illness. The Fake Bad Scale (*FBS*) identifies faking in personal injury claimants (MMY, 2004).

The MMPI-2 has served as a standard for the assessment of malingering and related response styles. A fake-bad or malingering profile is a profile in which an individual to present an unrealistic negative impression of him or herself. Six MMPI-2 fake-bad scales and indexes were analyzed for their potential usefulness in the evaluation of a malingering individual. It was found that three of the six (F, F-K, and O-

S) had strong effect sizes, which were maintained across both nonclinical controls and psychiatric groups (Rogers, 1984).

In a 1994 study, researchers tested the effects of giving brain injury information and or coaching on the likelihood of obtaining a fake-bad profile. The MMPI-2 profile is susceptible to the effects of both coaching and brain injury information. Individuals had elevated clinical scales would be expected in people suffering a closed head injury while producing validity profiles that did not indicate marked symptom exaggeration (Hiscock, Branham, & Hiscock, 1994).

Another scale created for the MMPI-2 is the malingered depression (*Md*) scale to detect attempts at malingering depressive symptomatology. This scale is supposed to be able to distinguish individuals who are genuinely depressed from those that are malingering, even when coached. There was a concern that individuals who malingered depressed symptoms were not adequately detected by previously existing validity indices (Sweet et al., 2006). It was found to correlate highly with other validity indices of the MMPI-2 as well as being correlated significantly with measures of depression with individuals with and without a secondary gain. The *Md* scale showed relatively little relationship to either secondary gain or cognitive malingering (Sweet, 2006). Thus, it depends on what type of symptoms that the potential malingerer uses to be detected on the *Md* scale.

Problems in Literature

Studies in the past have failed to acknowledge other incentives for malingering besides litigation status. Other incentives for malingering may include obtaining wage replacement benefits, eliciting sympathy, or avoiding criminal responsibility.

Participants are often given a scenario in which they are survivors of an automobile accident and are asked to malinger based on this information alone or given additional coaching in order to simulate a brain injury more convincingly (Cato et al., 2002). Studies that use college age or simulated malingerers have strengths, such as ease of obtaining a high internal validity (Demakis, 2004). There are some problems with the simulation design, such as the "malingering simulator paradox" in which participants are to comply with instructions to fake symptoms in order to study participants who are coached. The compliance with the examination process differs between those who are asked to malinger and those who "truly" malingerer. Overall, this makes two separate populations which are difficult to compare. Another problem is that studies tend to evaluate test performance and neglect behavior observation, which makes them different from a clinical situation. A third problem is that actual malingerers may have some genuine brain impairments, however mild, complicating the diagnostic picture for clinicians. How all of these problems influence motivation, preparation for the examination, and different malingering strategies is unknown leaving researchers unable to easily compare groups (Demakis, 2004).

The uses of real-word clinical samples are not common and the conclusions are limited by factors such as anecdotal case selection and the low group size for suspected malingerers. Admission of malingering is exceedingly uncommon; a major difficulty in clinical research is the assignment of malingering status to real world clients independent of performance on malingering measures (Greiffenstein et al., 1994). Therefore, the use of simulated populations is necessary because finding individuals who have successfully malingered is unlikely.

Another criticism is the use of college students is the lack of similarity to clinical malingerers in terms of motivation (Franzen & Martin, 1996). Participants in most simulated college studies are only motivated with course credit or extra credit. There are much greater rewards in real life situations that may provide a significantly higher level of motivation for individuals to expend more effort and time into researching and carrying out the attempts to malinger (Tan et al., 2002). Another criticism is that college students are rarely provided with information about the disorder they are to feign. Just asking participants to simulate malingering is not a perfect solution as people may not know much about symptoms of someone attempting to malinger. It is possible that the more information that is given to participants, the more likely they will be able to convincingly simulate brain injury (Cato et al., 2002). It has been suggested that clients are given information about a feigned disorder by a hired attorney. A highly motivated malingerer may also be apt at researching the disorder he or she wants to feign. Coached participants were better able than their uncoached participants to avoid detection measures of malingering (Rose, Hall, & Szalda-Petree, 1998). However, a 1991 study by Fredderick and Foster found that the addition of information to malinger did not greatly improve malingerers' ability to avoid detection as the informed malingerers were still correctly classified as fakers. Another study in 1991, indicated that undergraduate students given information of the effects of head injury on memory performance were not better able to malinger memory deficits than students who were not give the information (Wilhelm, 1991).

The use of college students as malingerers may be a serious limitation as college students represent a unique group due to their academic endeavors. Using more suitable

samples to simulate malingering such as inmates or psychiatric patients would be of better use to simulate malingering (Haines & Norris, 2001). The methodology of this study requiring the use of student participants with no history of brain injury is a limitation. The use of written scenarios poses a threat to external validity or generalizability of the results (Cato et al., 2002). The difference between the students and non-students in a study by Haines and Norris (2001), suggest that further malingering researchers using simulated malingerers who are closer in demographic variables to brain-injured individuals is seriously needed. The suspected malingerers tested in forensic setting are of lower levels of education, older in age, and have cognitive function in low average range (Haines & Norris, 2001). However, student simulated malingerers may generalize better to malingering populations typically seen in private practice settings where civil suit litigants may be have higher education levels and premorbid cognitive functioning in the average to high range (Haines & Norris, 2001). In conclusion, the use of college students is a plausible and useful population to use as simulated malingerers, especially for civil suit cases.

Present Study

Kaufman Brief Intelligence Test- Second Edition

The Kaufman Brief Intelligence Test- Second Edition (KBIT-2) is a twenty minute intelligence test for individuals from four years old to ninety years old. It was designed a measure for screening, conducting periodic cognitive revaluations, and assessing cognitive function when it is a secondary consideration.

The KBIT-2 has a Verbal and a Nonverbal scales, as well as an IQ Composite. The Verbal scale consists of comprehension, reasoning, and vocabulary knowledge

(Riddles), as well as receptive vocabulary and general information (Verbal Knowledge). The Nonverbal scale assesses the ability to complete visual analogies and understand relationships (Matrices). All responses involve either a pointing or one-word answers with binary scoring, thus little querying is needed. Basals (starting point for subtest) for all subtests involve passing the first three items at an age based entry point. Failing four consecutive items gives a ceiling (ending point for subtest). The measure is still acceptable with limited English and with deaf individuals.

Overall, the KBIT-2 was developed to be a good measure of general cognitive ability and is brief, valid, and reliable. It has a wide range of IQ values including a range for mental retardation to a range of gifted. It is unknown to this researcher if there is any previous attempt to use the KBIT-2 as an embedded measure of malingering. This measure was not originally designed to detect malingering, however, if individual scores in the mental retardation level without any prior history of mental retardation then a clinician may want to explore more tests of malingering.

Hypothesis

College age students will be able to successfully malinger by feigning slower cognitive thought and cognitive impairment when given information about traumatic brain injuries. There would be no significant difference between those asked to malinger (experimental group) and those who were not asked to malinger (control group). The KBIT-2 (embedded measure) will be able to detect malingers, as well as the TOMM (true measure). Also, there will be no significant difference between male and female participants on either the TOMM or the KBIT-2 scores.

METHODS

Participants

There were a total of 88 participants in this study. Participants were 18 to 51 years old (*M*=21.72, *SD*=4.96) and mostly Caucasian (88.6%). The breakdown of participants' grade in school was: freshman (51.1%), sophomore (15.9%), junior (10.2%), senior (8.0%), and graduate (14.8%). The majority of participants were female (63.4%) and males made up the rest (36.4%). All participants were screened for history of loss of consciousness, past head injury of a serious nature, or involvement in litigation involving any kind of acquired disability. All participants who were offered extra credit by their respective professors were provided with extra credit slips.

Procedure

Participants were recruited from psychology classrooms, through campus bulletin boards, and online. They were given a brief description of the study and were told that the approximate time of the study would take be 60-90 minutes. Participants were tested individually due to the fact that there is only one psychology assessment manual per test. A participant entered the research room #115 in Martin Allen. Then the participant was given a consent form to read and sign. If a participant did not sign the consent form, the participant was not allowed to participate in the study. A participant was told that if they wish to end the study early, the participant will be allowed to due so without penalty. If he or she was taking the study as a way to earn extra credit for a class, then that participants was told that they will receive a slip indicating the date, how long the study took, the name of the study, and would be signed by this investigator. Then the participant was given the demographic survey. After the demographic survey,

the participant was given either the control scenario or the experimental scenario. The control scenario was as follows:

Two weeks ago you were in a car accident that was not your fault. A truck ran a stop sign while you were in the intersection and hit you. You hit your head against the dashboard and were knocked out for a couple of minutes. Afterwards, you felt "dazed" for a while. You went to the hospital and were released with a clean bill of health. You feel perfectly normal. Because another person caused this accident, you will get compensated for time, money, and any emotional anguish.

To make sure that you are healthy, a psychologist is about to examine you using several tests of your memory and problem solving ability. The purpose of the testing is to decide if there were any long-term effects from your head injury. Your job is to complete the assessments to the best of your ability and to perform normally.

The experimental scenario was as follows:

Two weeks ago you were in a car accident that was not your fault. A truck ran a stop sign while you were in the intersection and hit you. You hit your head against the dashboard and were knocked out for about twenty minutes. Afterwards, you felt "dazed" for a while. You had to stay in the hospital for two days with a severe concussion and lost your job. Because another person caused this accident, you are now in a lawsuit to decide how much money you will get from the person responsible. The more severe your problems, the more money you will get in the lawsuit.

As part of the lawsuit a psychologist is about to examine you using several tests of your memory and problem solving ability. The purpose of the testing is to decide if there were any long-term effects from your head injury. Your goal is to convince your examiner, by your performance on these tests, that you have suffered brain damage from the accident. In order to convince the examiner that you have brain damage, you are going to produce the most severe problems that you can make. You did some research on the internet and found some information. People who have head injury often have problems paying attention, cannot remember things as well, and do not learn things as easily as they did before their injury. They also think a little slower than they used to. Keep this is mind when taking the tests. Remember, you are trying to produce the most severe problems that you can, mimicking the performance of people who are truly injured.

Each scenario was alternated between participants, i.e. odd code numbers will be experimental and even code numbers will be control. After the scenario, a participant was administered the KBIT-2 and TOMM. After every two participants, a participant was administered the TOMM and then the KBIT-2. The TOMM takes approximately 15-20 minutes to administer and the KBIT-2 takes approximately 15-30 minutes. After

the administration of both assessments, all participants were given a simple motivation survey.

Measures

Demographic Survey: Questions on the demographic survey include age, birth date, grade level, major, if they have had a traumatic brain injury, and if they have been in a lawsuit regarding traumatic brain injury.

Possibly Embedded Measure: The KBIT-2 was standardized on a sample of 2,120 individuals that were stratified on geographic region, education level and ethnicity. There is an overrepresentation in the Southern and Northeastern regions of the United States. Thirty-four states and the District of Columbia were involved in the norming process. School age individuals that were in special education and talented students were included as well. Equal sex representation was used. Non-English speaking individuals, institutionalized people, and those with significant physical, perceptual, or psychological impairments were excluded. The age range for the KBIT-2 is ages four to ninety years old.

The KBIT-2 consists of three subtests that yield three scores: Verbal, nonverbal, and IQ Composite. The Verbal score comprises two subtests (Verbal Knowledge and Riddles) that measures verbal concept formation, range of general information, verbal school-related skills by assessing a person's word knowledge, and reasoning ability. The Verbal subtests measure crystallized ability. The Nonverbal score consists of the Matrices subtest measures the ability to solve new problems by assessing an individual's ability to perceive relationships and complete visual analogies. The Nonverbal subtest measures fluid reasoning.

Concerning reliability, the IQ Composite internal consistency coefficient of .93 across ages (.89-.96) is good. The reliabilities tend to increase with age. The Verbal had an internal consistency coefficient of .91 and the Nonverbal subscale at .88. This is lower than the IQ composite internal consistency coefficient but is still good. However, it should be noted that the Nonverbal coefficients were only .78 at the ages four and five. The test-retest stability is at .90 after 22-30 days.

The validity of this measure shows no meaningful differences across sex. Concurrent validity evidence was found with the Wechsler Abbreviated Scale of Intelligence (WASI). Correlations studies were also completed with the Wechsler Intelligence Scale for Children: Third and Fourth Edition (WISC-III and WISC-IV), Wechsler Adult Intelligence Scale: Third Edition, (WAIS-III), Kaufman Test of Educational Achievement: Second Edition (KTEA-II), and Wechsler Abbreviated Scale of Intelligence (WRAT3). The correlations provide evidence of good construct validity.

True measure: The TOMM (Tomgaugh, 1996) is a measure specifically designed to assess effort on a perceived memory test. It is a forced-choice recognition task consisting of line drawings of common objects. It includes two learning trails and one optional retention trail, where participants make two-alternate forced-choice decisions to identify the objects they had seen previously (Tan et al., 2002). No incorrect choice is presented more than once throughout the measure. It appears to have high specificity and positive prediction value. It also may be relatively impervious to neurological disorders and is not affect by variable such as age, education, and affective state (Tan et al., 2002). Scores below 45 (90% correct) on the retention trial suggest that participants have not performed to the best of their abilities. The TOMM is highly

accurate in differentiating malingering individuals from normal controls. It has been shown to be unaffected by other mental disorders, mild intellectual impairment, and language disorders (Lynch, 2004). The TOMM has previously been validated using individuals diagnosed with mental retardation. It should be noted, however, an individual with dementia will score below the cutoffs, while most genuinely impaired patients perform will above cutoffs (Tombaugh, 1997). Thus, clinicians may wish to avoid or are advised to use caution when interpreting the TOMM in a population suspected with dementia. The TOMM is a unique measure in which the test instructors and an individual's responses can be handled with little or no verbal interaction. The TOMM requires about 15-30 minutes to administer the three trials. (Graue et al., 2007; O'Bryant, & Lucas, 2006).

Ending Questionnaire: It consists of a Likert scale that gauges how motivated students were during the study, and if they felt as if they could fool a psychologist or a medical doctor. Students were also asked to rate if they had ever heard the term malingering before and if they thought that they knew the definition of malingering.

RESULTS

The SPSS program was utilized for all the statistical analyses. Using this program, descriptive statistics were obtained and independent *t* tests and correlations were performed.

Manipulation Check and Ruling Out Confounds

In this present study, a manipulation check was necessary to rule out a number of confounds that could complicate and cloud the integrity of the results. The first manipulation check was to ensure that participants who qualified to be in the study and had a loss of consciousness were not significantly different from those who had never experienced a loss of consciousness before. Independent *t* tests were used to find if there was any significant differences between scores on the KBIT-2 and the TOMM based on if participants had lost any amount of consciousness or not. Twenty-nine participants (33.0%) admitted to having been unconscious during sometime in their lifetime (but did not meet exclusion requirements) and 59 participants (67.0%) denied having ever been unconscious. There were no significant differences found between the scores of those who have experienced a loss of consciousness from those who did not experience a loss of consciousness on all the three KBIT-2 scores and the three trails of the TOMM. Therefore, having been unconscious at one point in a participant's lifetime did not affect the results of this study. See Table 2 for related statistics.

Table 2

Independent t tests of Test Scores and Loss of Consciousness

Test	Lost Conscious	*N*	*M*	*SD*	*t*	*p*
KBIT-2						
Verbal	Yes	29	82.52	29.29	.39	.70
	No	59	80.10	26.16		
Nonverbal	Yes	29	75.83	28.37	-.91	.36
	No	59	81.68	28.25		
Composite	Yes	29	78.52	28.93	-.29	.76
	No	59	80.32	27.12		
Trial 1	Yes	29	34.55	13.50	-.97	.33
	No	59	37.64	14.31		
Trail 2	Yes	29	34.69	16.54	-.83	.41
	No	59	37.83	16.66		
Retention	Yes	16	22.13	12.97	1.16	.25
	No	24	17.54	11.80		

The second manipulation check was used to rule out any sex differences. An independent samples *t* test was utilized to compare TOMM scores, KBIT-2 scores, motivation, having heard of malingering, knowing the definition of malingering, believing that one could fool a psychologist, and believing that once could fool a medical doctor based on sex. There were no significant differences found between sex and test scores. The KBIT-2 Verbal scores did not significantly differ between males and females, $t(56.24) = -1.66$, $p = .10$, two tailed. There was no significant difference between men ($M = 74.34$, $SD = 29.61$) and women ($M = 84.64$, $SD = 25.05$). The KBIT-2 Nonverbal scores did not significantly differ between males and females, $t(86) = -1.14$, $p = .10$, two tailed. There was no significant difference between men ($M = 75.22$,

SD = 29.96) and women (*M* = 82.34, *SD* = 27.18). The KBIT-2 Composite scores did not significantly differ between males and females, *t*(86) = -1.40, *p* = .17, two tailed. There was no significant difference between men (*M* = 74.31, *SD* = 29.30) and women (*M* = 82.82, *SD* = 26.30).

An independent samples *t* test was performed to assess whether the TOMM Trial 1 scores differed significantly between males and females. The TOMM Trial 1 scores did not differ significantly, *t*(86) = -.71, *p* = .48, two tailed. There was no significant difference between men (*M* = 35.22, *SD* = 15.40) and women (*M* = 37.43, *SD* = 13.28). The TOMM Trial 2 scores did not differ significantly between males and females, *t*(52.57) = -.89, *p* = .38, two tailed. There was no significant difference between men (*M* = 34.56, *SD* = 19.21) and women (*M* = 38.07, *SD* = 14.93). The TOMM Retention Trial scores did not significantly differ between males and females, *t*(38) = -1.84, *p* = .07, two tailed. There was no significant difference between men (*M* = 14.64, *SD* = 11.61) and women (*M* = 21.92, *SD* = 12.15).

There was also no significant difference between motivation and sex. Motivation scores did not differ significantly between males and females, *t*(86) = -.98, *p* = .33, two tailed. There was no significant difference between men (*M* =4.25, *SD* = .67) and women (*M* = 4.39, *SD* = .65). However, there was a significant difference between males and females based on the belief that one could fool a psychologist and a medical doctor. When comparing males and females on the belief that they could fool a psychologist, there was a significant difference. The assumption of homogeneity of variance was assessed by the Levene test, *F* =2.38, *p*=.13; this indicated that there was no significant violation of the equal variance assumption; therefore, the equal variances

assumed version of the *t* test was used. The scores of believing they could fool a psychologist differed significantly, $t(86) = 3.64$, $p = .00$, two tailed. The scores for the males ($M = 2.97$, $SD = 1.23$) were significantly higher than scores females ($M = 2.11$, $SD = .97$). These results indicate that this sample, males believed that they would be able to fool a psychologist more than females did.

When comparing males and females on the belief that they could fool a medical doctor, there was another significant difference. The assumption of homogeneity of variance was assessed by the Levene test, $F = 2.73$, $p = .08$. This indicated that there was no significant violation of the equal variance assumption; therefore, the equal variances assumed version of the *t* test was used. The scores of believing they could fool a medical doctor differed significantly, $t(86) = .54$, $p = .01$, two tailed. The scores for the males ($M = 2.88$, $SD = 1.24$) were significantly higher than scores females ($M = 2.21$, $SD = 1.00$). These results indicate that this sample, males believed that they would be able to fool a medical doctor more than females did.

The third and final manipulation check was used to assess if there were correlational differences between the control group and the experimental group. A split-file was performed to separate the control group and the experimental group. A Pearson correlation coefficient was calculated for the relationship between a participants motivation for those asked to malinger and if the participant believed that he or she could fool a psychologist. A strong positive correlation was found $r(42) = .30$, $p < .05$, indicating a significant linear relationship between the two variables. The more motivation that individuals had to complete the study, the more likely individuals believe that they could fool a psychologist. Another Pearson correlation coefficient was

calculated for the relationship between participants' motivation for those who were not asked to malinger and if participant's believed they could fool a medical doctor. A negative relationship was found $r(42) = -.326$, $p < .05$, indicating a significant linear relationship between the two variables. The more motivation individuals had to complete the study, the less likely individuals believed that could fool a medical doctor. See Table 3 for related correlations.

Table 3

Correlations between Motivation and Fooling Psychologists and Medical Doctors

	Psychologist	Medical Doctor
Malingering (N = 44; df= 43)		
Motivation	.30*	.23
Psychologist		.60**
No Malingering (N = 44; df= 43)		
Motivation	-.25	-.33*
Psychologist		.50**

*$p < .05$, two-tailed
**$p < .01$, two-tailed

Overall, the manipulation was successful in ruling out possibly confounding variable that would interfere with the interpretation of the results. The first manipulation check allowed the inclusion of participants who have experienced some type of consciousness but did not meet the exclusion criteria. The second manipulation check ruled out sex as a confounding variable for most of the variables used. The third manipulation check allowed for a clear correlational effect to be found between experimental and control groups.

Comparison of Tests

The next step was to determine if the TOMM and KBIT-2 were able to be statistically comparable. The first analysis involved comparing the KBIT-2 scores for those who were suspected of malingering on the TOMM and those not suspected of malingering on the TOMM. In this current study, there were a total of 44 participants who were told to malinger (experimental group) and 44 who were not told to malinger (control group.) There were 38 participants (43.2%) who were suspected of malingering on the TOMM given the cutoff scores provided in the manual. There were 50 participants (56.8%) who were not suspected of malingering on the TOMM. On the TOMM, low scores indicate the potential of malingering and low KBIT-2 scores may indicate individuals are performing in a retardation level.

An independent samples *t* test was performed to assess whether the KBIT-2 Verbal scores differed significantly for those who were suspected of malingering on the TOMM and for those who were not suspected of malingering on the TOMM. The assumption of homogeneity of variance was assessed by the Levene test, $F = 32.54$, p=.00; this indicated that there was a significant violation of the equal variance assumption; therefore, the equal variances not assumed version of the *t* test was used. The KBIT-2 Verbal scores differed significantly, $t(54.30) = -8.44$, $p = .00$, two tailed. The KBIT-2 Verbal scores for the group that was suspected of malingering on the TOMM ($M = 59.29$, SD= 24.98) were significantly lower than the KBIT-2 Verbal scores for the group that was not suspected of malingering on the TOMM ($M = 97.32$, $SD = 13.94$). Overall, this indicates that the manipulation of the experimental group

worked. It should be expected that those who were suspected of malingering would perform more poorly on the KBIT-2 Verbal score and thus have a lower IQ score.

An independent samples *t* test was performed to assess whether the KBIT-2 Nonverbal scores differed significantly for those who were suspected of malingering on the TOMM and for those who were not suspected of malingering on the TOMM. The assumption of homogeneity of variance was assessed by the Levene test, $F = 19.13$, $p=.00$. This indicated that there was a significant violation of the equal variance assumption; therefore, the equal variances not assumed version of the *t* test was used. The KBIT-2 Nonverbal scores differed significantly, $t(54.33) = -11.39$, $p = .00$, two tailed. The KBIT-2 Nonverbal scores for the group that was suspected of malingering on the TOMM ($M = 54.05$, $SD= 22.00$) were significantly lower than the KBIT-2 Nonverbal scores for the group that was not suspected of malingering on the TOMM ($M = 99.28$, $SD = 12.30$). This also indicates that the manipulation of the experimental group worked. It should be expected that those who were suspected of malingering would perform more poorly on the KBIT-2 Nonverbal score and thus have a lower IQ score.

An independent samples *t* test was performed to assess whether the KBIT-2 Composite scores differed significantly for those who were suspected of malingering on the TOMM and for those who were not suspected of malingering on the TOMM. The assumption of homogeneity of variance was assessed by the Levene test, $F = 23.38$, $p = .00$. This indicated that there was a significant violation of the equal variance assumption; therefore, the equal variances not assumed version of the *t* test was used. The KBIT-2 Composite scores differed significantly, $t(53.93) = -10.61$, $p = .00$, two

tailed. The KBIT-2 Composite scores for the group that was suspected of malingering on the TOMM (M = 22.50, SD= 3.65) were significantly lower than the KBIT-2 Composite scores for the group that was not suspected of malingering on the TOMM (M = 98.28, SD = 12.42). This also indicates that the manipulation of the experimental group worked. It should be expected that those who were suspected of malingering would perform more poorly on the KBIT-2 and thus have a lower Composite IQ score.

On all of the KBIT-2 scores (Verbal, Nonverbal, & Composite IQ) there were significant differences between those that were suspected of malingering on the TOMM to those who were not suspected of malingering on the TOMM. All of the KBIT-2 scores for the participants that were suspected of malingering on the TOMM were significantly lower than the three KBIT-2 scores for those not suspected of malingering on the TOMM. See Table 4 for related statistics.

Table 4

Independent t tests of KBIT-2 scores and Participants Suspected of Malingering on TOMM

KBIT-2	Malingering	N	*M*	*SD*	*t*	*p*
Verbal	Yes	38	59.29	24.98	-8.44	.00
	No	50	99.28	12.30		
Nonverbal	Yes	38	54.05	22.00	-11.39	.00
	No	50	99.28	12.30		
Composite	Yes	38	55.31	22.50	-10.61	.00
	No	50	98.28	12.42		

The second analysis involved comparing the TOMM Trial Scores to those who had show regression of the KBIT-2 and those who showed no regression of the KBIT-2. There were 43 participants (48.9%) who regressed back to a younger starting point on

the KBIT-2. There were 45 participants (51.1%) who started and continued on their age level.

An independent samples *t* test was performed to assess whether the TOMM Trial 1 scores differed significantly for those who were regressed in the starting point on the KBIT-2 and for those who did not regress in the starting point on the KBIT-2. The assumption of homogeneity of variance was assessed by the Levene test, $F = 20.60$, $p = .00$. This indicated that there was a significant violation of the equal variance assumption; therefore, the equal variances not assumed version of the *t* test was used. The TOMM Trial 1 scores differed significantly, $t(53.94) = -10.94$, $p = .00$, two tailed. The TOMM Trial 1 scores for the group that regressed to an earlier age group ($M = 25.65$, $SD = 12.02$) were significantly lower than the TOMM Trial 1 scores for the group that did not regress ($M = 47.11$, $SD = 4.68$). This also indicates that the manipulation of the experimental group worked. It should be expected that those who showed regression on the KBIT-2 (which may indicate lower IQ scores) would perform poorly on TOMM Trial 1 by having a lower score than the control group.

An independent samples *t* test was performed to assess whether the TOMM Trial 2 scores differed significantly for those who were regressed in the starting point on the KBIT-2 and for those who did not regress in the starting point on the KBIT-2. The assumption of homogeneity of variance was assessed by the Levene test, $F = 41.98$, $p =. 00$. This indicated that there was a significant violation of the equal variance assumption; therefore, the equal variances not assumed version of the *t* test was used. The TOMM Trial 2 scores differed significantly, $t(47.14) = -10.09$, $p = .00$, two tailed. The TOMM Trial 2 scores for the group that regressed to an earlier age group ($M =$

24.26, *SD*= 15.47) were significantly lower than the TOMM Trial 2 scores for the group that did not regress (*M* = 48.78, *SD* = 3.92). This also indicates that the manipulation of the experimental group worked. It should be expected that those who showed regression on the KBIT-2 (which may indicate lower IQ scores) would perform poorly on TOMM Trial 2 by having a lower score than the control group.

Overall, participants who had a regression of the starting point on the KBIT-2 had significantly lower scores on Trail 1 and Trial 2 of the TOMM than those that did not show any regression on the KBIT-2. See Table 5 for related statistics.

Table 5

Independent t tests of TOMM scores and Regression on KBIT-2

TOMM	Regression	N	*M*	*SD*	*t*	*p*
Trial 1	Yes	43	25.65	12.02	-10.94	.00
	No	45	47.11	4.68		
Trail 2	Yes	43	24.26	15.47	-10.09	.00
	No	45	48.78	3.92		
Retention	Yes	36	17.64	11.49	-2.92	.00
	No	4	35.00	8.6		

The results indicate that the two tests are able to be compared with each other. Both the TOMM and the KBIT-2 scores of the experimental group and the control are similar enough that conclusions are able to be drawn from the results. Overall, it is similar to comparing apple to apples rather than apples to oranges.

Hypotheses Results

It was hypothesized that college age students would be able to successful malinger by feigning slower cognitive thought and cognitive impairment when given

information about traumatic brain injuries. There would be no significant difference between those asked to malinger (experimental group) and those who were not asked to malinger (control group). However, the results indicate that there is a significant difference between the two groups.

An independent samples *t* test was run comparing participants who were asked to malinger to those who were not asked to malinger based on scores of the TOMM and KBIT-2. A significant difference was found between the two groups. Those that were asked to malinger had significantly lower scores on both the TOMM and the KBIT-2 compared to those that were not asked to malinger. Thus, most participants who were asked to malinger were detected on the TOMM and had lower KBIT-2 scores. See Table 6 for related statistics.

Table 6

Independent t tests of Test Scores and Being asked to Malinger

Test	Asked to Malinger	*M*	*SD*	*t*	*p*
KBIT-2					
Verbal	Yes	61.89	24.96	-9.24	.00
	No	99.91	11.05		
Nonverbal	Yes	59.07	24.40	-10.08	.00
	No	100.43	12.05		
Composite	Yes	59.00	23.06	-10.71	.00
	No	100.45	11.28		
TOMM					
Trial 1	Yes	24.86	10.59	-14.49	.00
	No	48.39	1.96		
Trail 2	Yes	23.64	14.23	-12.27	.00
	No	49.95	.30		

Note: The Retention Trial of the TOMM was not given to the control group thus could not be compared. There were 44 participants in each group.

An independent samples *t* test was performed to assess whether the participants held a belief that they could fool a medical doctor differed between the group that was asked to malinger and the group that was not told to malinger. The assumption of homogeneity of variance was assessed by the Levene test, $F = .87$, $p = .35$; this indicated that there was no significant violation of the equal variance assumption. Therefore, the equal variances assumed version of the *t* test was used. The scores of believing they could fool a medical doctor differed significantly, $t(86) = 2.52$, $p = .01$, two tailed. The scores for the group asked to malinger ($M = 2.75$, $SD = 1.12$) were significantly higher than scores for the group was not asked to malinger ($M = 2.16$, $SD = 1.08$). No significant differences were found when comparing the group that was asked to

malinger and the group that was not asked to malinger based on motivation ($t(86) = .65$, $p = .52$, two tailed), being able to fool a psychologist ($t(86) = 1.22$, $p = .23$, two tailed), having heard of malingering ($t(86) = -.63$, $p = .53$, two tailed), or knowing the definition of malingering ($t(86) = .08$, $p = .94$, two tailed).

The frequencies of the participant's score for the KBIT-2 Verbal, Nonverbal, and Composite are indicated in Table 7. The frequencies are divided up by experimental group and control group. There is a clear difference in the frequency of score between the two groups. The lowest possible score to be obtained on all of the KBIT-2 scales is 40 and the highest score is 160.

Table 7

Frequency of Participants on KBIT-2 Scores

Score Range	Verbal		Nonverbal		Composite	
	Exp	Control	Exp	Control	Exp	Control
40-50	23	0	25	0	25	0
51-60	2	0	2	0	1	0
61-70	2	0	2	0	2	0
71-80	2	0	3	1	4	0
81-90	5	8	5	9	6	5
91-100	7	17	3	19	4	21
101-110	2	11	3	4	1	10
111-120	1	6	1	10	1	3
121-130	0	2	0	2	0	4
131-140	0	0	0	0	0	1

The frequencies of the participant's score for the TOMM Trial 1 and Trial 2 are indicated in Table 8. The frequencies are divided up by experimental group and control group. There is a clear difference in the frequency of score between the two groups. The lowest possible score to be obtained on both Trial 1 and Trial 2 scores is 0 and the highest score is 50.

Table 8

Frequency of Participants and Respective TOMM Scores

Score Range	Trial 1		Trial 1	
	Experimental	Control	Experimental	Control
0-10	5	0	10	0
11-20	8	0	8	0
21-30	21	0	15	0
31-40	6	0	6	0
41-50	4	44	5	44

On the KBIT-2 there is an age-indicated starting point. If the first three items on a starting point are not correctly answered by a participant, the examiner regresses to a younger starting point. There were 43 participants who regressed on their age indicating starting point or basal point. On the KBIT-2 subtests for those asked to malinger, 25 participants (58.6%) regressed to a four year old level, six participants (13.6%) to a seven year old level, one participant (2.3%) to an eight year old level, six participants (13.6%) to an eleven year old level, and six participants (13.6%) showing no regression of a starting point. Those that were not asked to malinger did show some regression as

well. One participant (2.3%) regressed to a four year old level, three participants (6.8%) to a seven year old level, one participant (2.3%) to an eight year old level, one participants (2.3%) to an eleven year old level, and 38 participants (86.4%) showing no regression of a starting point. Overall, both experimental and control groups showed some regression of the age indicated starting group. However, those in the experimental group had over half of the participants regress back to a four year old starting point. This quite different compared to one participant in the control group who regressed to that level which is considered to be in the mental retardation range. College students would not be expected to perform in the mental retardation range. See Table 9 for related statistics.

Table 9

Frequency of Participants and Regression Level on KBIT-2

Regression Level	Age 4	Age 7	Age 8	Age 11	None
Experimental	25	6	1	6	6
Control	1	3	1	1	38

DISCUSSION

The present study provided some insight into the test taking patterns of students at Fort Hays State University, who were asked to malinger. Participants who were asked to malinger were given four symptoms of patients who have been diagnosed with a mild traumatic brain injury. Also, to discover how they would malinger based on a few given symptoms. The results indicated that 38 of 44 participants were unable to successfully malinger on the TOMM. This means that these participants were suspected of malingering on the TOMM and failed to escape detection. Their scores were low enough to be suspected of malingering on this true measure of malingering. However, six participants who were asked to malinger, did not have scores that would indicate malingering on the TOMM. These participants may have been able to successfully malinger or they may have not understood the introductions of the study. The results for the KBIT-2 indicated that 25 of 44 participants who were asked to malinger regressed back to a four year old level. At this level, college age students may have been unable to successfully point out pictures of a clock, money, socks, bed, or a peanut. These students would range in the lowest possible score (40) for the three subtests of the KBIT-2. This indicates that the KBIT-2 may have some potential as an embedded measure of malingering. Overall, there was a significant difference on the two TOMM Trials and the three KBIT-2 IQs based on whether participants were asked to malinger or not to malinger.

When compared to other studies that researched the possibility of finding cut-offs for malingering, the KBIT-2 shows promise. On the KBIT-2 subtests for those

asked to malinger, 25 participants (58.6%) regressed to a four year old level. These results indicate that a regression back to a four year old level may be suspected of malingering if an individual has no history of mental retardation. While the TOMM was able to detect almost all of the participants who were asked to malinger, the KBIT-2 had regression to a four year old level for over half of the participants who were asked to malinger. Overall, the current study found potential cutoff scores that warrant further investigation. The regression to a four year old level or basal group is a potential indicator of malingering. This study should be replicated at least on a clinical group like defendants referred for competency to stand trial or litigants involved in personal injury cases. Also, the study with the KBIT-2 should be used with a group diagnosed with mental retardation. It is important to compare the pattern that this study found with a group of mild-moderate MR patients. This is critical as clinicians do not want to label someone as malingering if they are performing their best but are simply performing in the mental retardation range.

Results showed that there was no significant difference between the TOMM scores, KBIT-2 scores, motivation, or heard/knowing the definition of malingering. There was, however, a significant difference between males and females on believing if one could fool a medical doctor and a psychologist. Men were more likely to believe that they would be able to successfully fool a medical doctor and a psychologist compared to women. Another avenue of research would be to study if men are more likely to malinger than women.

Although the main concern of this study was discovering if there was a pattern of malingering by a college population on the KBIT-2, other variables were also

examined. It was found that close to half (45.4%) of the college students did not recognize the term malingering and even more students did not know the definition of the term (60.2%).

Based on the motivation scores for this study, one may conclude that the college students did attempt to complete the scenario to the best of their abilities. Seventy-nine participants (89.8%) indicated that they were highly motivated to complete the study. This number is based off of one question asking how motivated they were and no further inquires about motivation were made.

There are a number of possible avenues for future research in the area of measuring malingering. A simulated approach like this study with college students can decrease confounding variables and provide a swift test of the precision of clinically obtained cutoffs like with the KBIT-2. It also allows for flexibility with the malingering instructions and the type of participant. Thus, the next avenue would be using the KBIT-2 with other true measures such as the TOMM with a clinical population and those that are suspected of malingering. Although a clinical approach takes more time and has more confounds, it allows for a more precise pictures of malingering that would be found in clinical practice. The clinical population may also represent a population that is more likely to malinger in forensic and clinical settings.

KBIT-2 has no time limit on any of the subtests. Those participants that chose to slow their cognitive thinking could not be measured as there is not time limit on the problems. This is different from other intelligences tests like the WAIS-III, were there may be a time limit on a subtest. Thus, if a participant takes over the allotted time but still gets it right, no points are awarded for that question because he or she went over the

set time limit. This is different on the KBIT-2 subtests were there is no allotted time limit for each question. If a participant chooses to take the time to answer more slowly than usual, but answers correctly, he or she will receive the full amount of points for that question.

The present study had several limitations that should be taken into consideration when making conclusions based on its results. A primary limitation of the current study was the homogeneity of the population from with the sample was drawn. The sample (N = 88) was largely made up of Caucasian individuals (88.6%), with the majority of the participants either being freshman or sophomores (67%). Further research in this area could be improved upon by using a larger sample and investigating whether similar results can be obtained with samples that are more racially and academically diverse.

Another main limitation is that the participants used in this study that were asked to malinger diverge in meaningful ways from "true" malingerers by age, education, fear of detection, work history, and motivation. While the college age population may be comparable to civil suit cases, this population may not be comparable in other situations. The college population is a unique population because of their academic achievements and activities. This makes them different from the general population, as well as, for the population that is at risk for being diagnosed with traumatic brain injuries. Also, these participants were not offered any type of monetary incentive which would compare to the large monetary settlements that motivate some "true" malingerers. Finally, those that "truly" malinger may have some type of real brain impairment or dysfunction that could complicate a diagnostic picture.

A third limitation of this study was that it was not a double-blind study. The researcher knew which participants were attempting to malinger based on their number. The participant may have tried to live up the expectations of the researcher. Also, the researcher was unable to gather behavioral observations that are vital to diagnosing malingering. Future research should include a double blind study in which the researcher is unaware if a participant was told to malinger or not.

In conclusion, it is recommended that future research expand into clinical and forensic practices. Despite limitations, the present study was successful in obtaining valuable information regarding how college students attending Fort Hays State University would malinger on a malingering measure and a brief intelligence test. Research on intelligence tests as embedded measures of malingering is growing and this may be the first for the KBIT-2. The current study may contribute to the field of research on malingering by serving as a reference used for further development in this particular area. As the economy continues to worsen, it is more important than ever to treat those only in need of treatment. In order to accomplish this, it is important to have good measures of malingering to contribute to a clinician's diagnostic picture. Good measures are only part of a complex process of diagnosing an individual as malingering.

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APPENDIX A

Informed Consent

CONSENT TO PARTICIPATE IN RESEARCH

Department of Psychology, Fort Hays State University

Study title: **Use of the Kaufman Brief Intelligence Test- Second Edition as an Embedded Measure of Malingering in a College Population**

Name of Researcher: Jamie Babutzke
Contact Information: 785-656-1498, 785-628-4309,
jlbabutzke@scatcat.fhsu.edu
Faculty Supervisor: Dr. Naylor at jmnaylor@fhsu.edu or 785-628-5857

You are being asked to participate in a research study. It is your choice whether or not to participate. Your decision whether or not to participate will have no effect on your academic standing. Please ask questions if there is anything you do not understand.

What is the purpose of this study ?
The purpose of the study is to understand if people can fake a psychological assessment, such as an intelligence test. What methods people will use to fool the assessment and if they are successful will also be examined.

What does this study involve ?
The study will involve providing basic information about age, gender, and ethnicity. Then you will read a scenario and try to act like the character in the story wile taking two different psychological assessments. Then a quick survey asking your motivation will end the study.

If you decide to participate in this research study, you will be asked to sign this consent form after you have had all your questions answered and understand what will happen to you. The length of time of your participation in this study is 60 to 90 minutes.

Are there any benefits from participating in this study ?
A possible benefit includes receiving extra credit if your professor allows. Your participation will help us learn more about faking traumatic brain injuries and people's ability to fool psychological assessments.

Will you be paid or receive anything to participate in this study ?
You will not receive any compensation for the results of this research.

What about the costs of this study ?
There are no costs for participating in this study other than the time you will spend taking the surveys and assessments.

What are the risks involved with being enrolled in this study ?
It is unlikely that participation in this project will result in harm to you. However, if you feel distressed or become upset by participating, the Kelly Center is located in Weist Hall, 6th Floor (785-628-4401). If you feel uncomfortable or become frustrated at any point during the project, you may discontinue participation.

How will your privacy be protected?
The investigator certified in HIPPA guidelines. After consent is given, each participant will be given a unique code number that relates in no way to you. A simple numbering of participants will be used to link the assessments and surveys. All data collected will be analyzed using only the participant's code number. The paper copies of all questionnaires and assessments will be housed in the researcher's office in a locked file cabinet. Aggregate results of the study will be included in articles for submission to peer-reviewed publications but your name will never be used in these presentations or papers. All questionnaires and information collected as part of this study will be maintained for five years post-publication to allow external investigation of the results. After a five-year period, all documents will be destroyed.

Other important items you should know:

• **Withdrawal from the study:** You may choose to stop your participation in this study at any time. Your decision to stop your participation will have no effect on the academic standing.
• **Funding:** There is no outside funding for this research project.

Whom should you call with questions about this study ?
Questions about this study: Jamie Babutzke at 785-656-1498 or 785-628-4309. If you have questions, concerns, or suggestions about human research at FHSU, you may call the Office of Scholarship and Sponsored Projects at FHSU (785) 628-4349 during normal business hours.

CONSENT
I have read the above information about *Use of the Kaufman Brief Intelligence Test- Second Edition as an Embedded Measure of Malingering in a College Population* and have been given an opportunity to ask questions. By signing this I agree to participate in this study and I have been given a copy of this signed consent document for my own records. I understand that I can change my mind and withdraw my consent at any time. By signing this consent form I understand that I am not giving up any legal rights. I am 18 years or older.

_____
Participant's Signature and Date

APPENDIX B

Demographic Survey

Code Number:_____

Demographics

Age:_____

Date of Birth:_____

Ethnicity: _____

Grade Level: Freshman Sophomore Junior Senior Graduate

Major:_____

Have you ever experienced a loss of consciousness before? Yes No
If yes, how long were you unconsciousness? _____minutes
Explain the cause of being unconscious:

_____

_____

Have you ever had a past head injury of a serious nature? Yes No
If yes, how long ago did this occur?_____

Have you ever been diagnosed with a traumatic brain injury before? Yes No

Have you ever been involved in litigation involving any kind of acquired disability?
Yes No

APPENDIX C

Ending Questionnaire

Ending Questionnaire

	Low/Unlikely				High/Likely
How motivated were you to do the tests?	1	2	3	4	5
Do you think that you could fool a psychologist?	1	2	3	4	5
Do you think that you could fool a medical doctor?	1	2	3	4	5
Have you ever heard of “malingering” before?	1	2	3	4	5
Do you know what malingering means?	1	2	3	4	5

APPENDIX D

Vita

VITA

Jamie Babutzke

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EDUCATION:

M.S. Masters in Clinical Psychology - Fort Hays State University (May 2010)
B.S. Psycho-Biology Comprehensive - University of Nebraska-Kearney (May 2007)

HONORS AND AWARDS:

Scholarships:

Graduate Assistant Tuition Waiver (FHSU 2008-2009); Graduate Assistant Tuition Waiver (UNK 2007-2008); Chancellors Scholarship (2003-2006); Psychology Faculty Scholarship; Emily Reiser Memorial Scholarship; SSS Grant Incentive for receiving Outstanding Student awards (2003-2005); Outside Scholarship; O'Neill Scholarship

Honors:

Dean's List (2003-2007); Student Support Services Scholar; *Fellow Student* for the UNK Psychology Department; Outstanding Student (2003-2005)

PROFESSIONAL EXPERIENCE:

Internship in Clinical Psychology at Kelly Center, Fort Hays State University campus (2009-2010)
Internship in Clinical Psychology at Larned State Hospital (Summer, 2009)
Practicum in Clinical Psychology at Kelly Center, Fort Hays State University campus (2008-2009)

RESEARCH AND TEACHING EXPERIENCE:

Teaching Assistant to Dr. Janett Naylor (Fall, 2008- Spring 2009)
Graduate Assistant to UNK Psychology Department (Fall, 2007-Spring, 2008)
Teaching Assistant to Dr. Wayne Briner (Spring, 2008)
Teaching Assistant to Dr. Joe Benz (Fall, 2007)
Research Assistant to Dr. Wayne Briner (Fall, 2004 –Spring, 2008)