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Abstract

The effects of a detailed scenario and accompanying questionnaire on the successful malingering of simulated malingerers was studied. Participants took the Word Completion Memory Test (WCMT) and the Rey-15 Item Memory Test. Participants received either the scenario and questionnaire, simple instructions to perform on the tests as they thought an amnesic might, simple instructions plus an unrelated task, or instructions to do their best (i.e., no malingering instructions). Both simple malingering groups completed the questionnaire at the end of the study. On both the WCMT and the Rey, the detailed malingerers were more likely to malinger than any of the other 3 groups. No differences were found between the simple malingering groups and the control group. Twice as many detailed-malingerers were classified correctly on the WCMT as on the Rey. Limitations of both tests are discussed. The questionnaire is presented as a possible screening tool to identify those simulated malingerers who are uncooperative or uninformed about amnesia.

Malingering is the feigning of a physical or mental disability in order to gain some type of compensation (often financial). The incidence of malingering is not known; however, estimates range from 1% to 50% (Resnick, 1988). Although there has been an increase in neuropsychological testing aimed at detecting malingering (Lee, Loring & Martin, 1992), researchers agree that these tests are often unable to differentiate malingerers from control participants (Pankratz & Erickson, 1990).

Test batteries, as well as individual tests, for the detection of malingering have been explored, although none have proven to be sufficiently effective. Aside from those problems regarding inadequate tests, subject factors, such as uncooperative or uninformed simulated malingerers, are cluttering experimental findings. Attempts have been made to curb these effects; some researchers have informed their simulators about amnesia, while other have offered monetary rewards. However, none of there strategies have increased malingering in an experimental setting.

Detection of malingering

Most studies compare test scores of simulated malingerers with controls and/or true amnesics (Baker, Haneley, Jackson, Kimmance & Slade, 1993; Bernard, 1990; Bernard, Houston & Natoli, 1993; Brandt, Rubinsky & Lassen, 1985; Goebel, 1983; Heaton, Smith, Ralph, Legman & Vogt, 1978; Horton, Smith, Brahout & Connolly, 1992; Martin, Bolter, Todd, Gouvier & Niccolls, 1993; Schretlen, Brandt, Drafft & Van Gorp, 1991; Wiggins & Brandt, 1988). Although batteries consisting of 3 to 5 different tests have been studied (e.g., the Wechsler Adult Intelligence Scale, the Halstead-Reitan battery, the Minnesota Multiphasic Personality Inventory, the Wechsler Memory Scale-Revised, the Complex Figure Test, the Auditory Verbal Learning Test, and Hebb's Recurring Digits), most of the recent studies have examined single tests such as forced

choice tasks (Bickard, Meyer & Connell, 1991; Brandt et al., 1985; Martin et al., 1993; Prigatano & Amin, 1993), the Rey 15-Item Memory Test (Bernard & Fowler, 1990; Goldberg & Miller, 1986; Lee, Loring & Mattin, 1992; Millis & Kler, 1995; Rey, 1964; Schretlen et al., 1991) and various indirect memory tests (Horton et al., 1992; Wiggins & Brandt, 1988). Nevertheless, test batteries are still studied in the malingering literature.

Psychometric test batteries. Researchers have used different combinations of tests to detect malingering. Most of these tests are psychometric (i.e., they are normed and standardized). Heaton, Smith, Ralph, Legman and Vogt (1978) compared the scores of real head-injured patients to those of simulated malingerers on the Wechsler Adult Intelligence Scale, the Halstead-Reitan battery and the Minnesota Multiphasic Personality Inventory (MMPI). Several judges individually classified each subject. They correctly classified 25% to 81.3% of the malingerers and misclassified 18.7% to 56.2% of the true amnesics. That the same set of data could result in such a varied set of classifications from these judges makes these results unreliable for this study, and too risky to be trusted in a clinical setting.

Bernard (1990) used the Wechsler Memory Scale-Revised, the Complex Figure Test, the Auditory Verbal Learning Test (AVLT) and the Rey 15-Item Memory Test to compare simulated malingerers to normal controls. Overall, the study correctly classified about 75% of the malingerers but misclassified approximately 25% of the controls. This rate of misclassification is unacceptably high, especially if this test battery is to be used in the detection of "real" malingerers.

In a similar study, Bernard et al. (1993) compared normal controls to simulated malingerers on the Rey 15-Item Test, Hebb`s Recurring Digits, the Wechsler Memory Scale (WMS), the Complex Figure test and the AVLT. They were able to correctly

classify 88% and 86% of malingerers on the WMS and the AVLT, respectively, without misclassifying any of the controls; however, the researchers were careful not to be too enthusiastic since these tests have only been able to identify simulated malingerers in an experimental setting, and they have not been shown to differentiate true amnesics from "true" malingerers in clinical setting. The other test scores proved to be ineffective in the classification process. In general, test batteries have been proven to be inadequate, suggesting that individual tests rather than batteries should be used to detect malingering.

Experimental tests. Individual, but more experimental, tests have recently become more prevalent in the malingering research (Bernard & Fowler, 1990; Bickard, et al., 1991; Brandt et al., 1985; Goldberg & Miller, 1986; Horton et al., 1992; Lee, Loring & Mattin, 1992; Martin et al., 1993; Millis & Kler, 1995; Prigatano & Amin, 1993; Rey, 1964; Schretlen et al., 1991; Wiggins & Brandt, 1988) . For example, forced choice tasks have recently received a great deal of attention from malingering researchers (Bickard, et al., 1991; Brandt et al., 1985; Martin et al., 1993; Prigatano & Amin, 1993). A representative example of a forced-choice tests the Digit Memory Test (Hiscock & Hiscock, 1989), in which the malingerer is shown a card with a 5 digit number for 5 s. After a 5 s delay, the malingerer is shown two cards (both with 5 digit numbers), one of which matches the first card shown, and is then asked to identify the matching number. These studies assume that malingerers will exaggerate a bad memory and perform below chance level on these tasks, which is a clear indication of malingering since true amnesics do not perform so poorly.

Prigatano and Amin (1993) found that true amnesics scored 95% to 100% on the Digit Memory Test developed by Hiscock and Hiscock (1989). Although their suspected

malingerers performed worse than the amnesics (74%), they did not score below chance. One group of researchers found that only 30% of their simulated malingerers actually performed below chance level on a forced- choice recognition test (Brandt et al., 1985). That simulators do not perform below chance in these studies invalidates the very assumption on which they are based - that is, malingerers would exaggerate memory loss and perform below chance.

Other researchers have manipulated the instructions given to simulated malingerers to either warn them that "overplaying their role" could get them caught, or to include information about the expected results of amnesics on forced-choice tests. It is conceivable that suspected malingerers might be aware that true amnesics tend to score at chance level on force-choice tests and regulate their responses accordingly. Bickard, et al. (1991) told their malingerers not to fake too badly and consequently identified only 21.5% of their simulators. Another group of researchers (Martin et al., 1993) compared "naive" malingerers to those who had been given "clues" (sophisticated malingerers) on how to beat the test (e.g., "Do not perform below chance"). Of the naive malingerers, 57% were able to "beat" the test and score above chance. Of the sophisticated malingerers, 90% scored above chance. Although these forced-choice tasks seldom misclassify true amnesics or controls as do the test batteries mentioned above, they do not correctly identify a significant number of malingerers and are vulnerable in that little information is needed in order to "beat" them.

These forced-choice tests are based on the notion that a performance that is below chance indicates malingering. Another approach is to present a simple test as being dramatically difficult, therefore prompting malingerers to "fake bad", when in fact, true amnesics would perform at only a slightly lower level than normals. The Rey 15-

Item Memory Test is such a test, and it has also been the subject of considerable attention from malingering researchers. Millis and Kler (1995), report that the Rey is a "frequently used procedure for the detection of malingered or feigned memory impairment" (p. 241).

The Rey consists of 15 items that are presented on a card with five rows of three characters each. Participants are told that the card will be shown for only 10 s in an effort to make the task seem harder than it is. In fact, only three basic concepts need be remembered. The cutoff, or number of items remembered correctly, for detecting malingering has not been agreed upon. Rey (1964) himself suggested a failure to recall two rows (9 items correct) indicates malingering. In another attempt to set a cutoff, Goldberg and Miller (1986) found that 100% and 65% of psychiatric inpatients and mentally retarded patients, respectively, recalled at least 9 items; they suggested that 9 be the cutoff. Similarly, Bernard and Fowler found that 16 out of 18 patients with neurological disorders scored at or above 9, and that the other two scored an 8 (1990). In contrast, having found that 95% of the neurological disorder patients scored at or above 7, Lee et al. (1992) suggest a cutoff of 7. Overall, the research has shown that cutoff of at least 7 will insure that few true amnesics will be misclassified as malingerers.

One study has attempted to use the Rey to detect malingering in 7 clinical malingerers, who had been identified as such by a below chance performance on a forced-choice test (Millis & Kler, 1995). Four of the seven malingerers were classified as malingerers using a cutoff of 7. On the other hand, all seven of the true amnesics tested scored above the cutoff. Again, a cutoff of 7 is shown not to have misclassified amnesics as malingerers; however, that only 57% of the malingerers were "caught" implies that the Rey may not be sufficient for the detection of malingering in a clinical

setting.

As for normal controls, Bernard and Fowler (1990) found that none got a score below 9, which suggests that a cutoff of 9 would not misclassify controls as malingerers. One study has compared the scores of controls, simulated malingerers and true amnesics (Schretlen et al., 1991). They found that a cutoff of 9 would only catch 13% of the malingerers while misclassifying 36% of the amnesics as malingerers and correctly classifying 100% of the controls. Increasing the cutoff to 12 increased the hit rate (number of malingerers correctly classified as such) for malingerers to 41% while increasing the false alarm rate (number of participants misclassified as malingerers) for amnesics to 61% and controls to 9%. A lower cutoff decreases the false alarm rate for amnesics and controls but decreases the hit rate for malingerers to 12%. In short, no cutoff has been established that does an adequate job of classifying correctly (i.e., at least one group is grossly misclassified). As with the forced-choice tests, it is possible that the basic assumption on which the Rey-15 Item is based may be violated; malingerers may not be fooled into thinking that the test is hard and therefore are not exaggerating a memory loss.

Recently, indirect (or implicit) memory tests have been used to detect malingering. Implicit memory involves the influence of previous experiences on certain tasks without necessary conscious recollection of these experiences (Roediger & McDermott, 1993; Schacter, 1987). That is not to say that only implicit memory is at work. Participants may well be aware that their pervious experience is related to their present task; however, awareness of this earlier experience is not required for the task. For example, participants might see a list of words and then later be asked to finish a word stem, such as *rob*___(word stem completion) with any word that comes to mind

(e.g., *robe* or *robber*). The participant is not asked to recall words from the list shown, but his or her performance is often influenced by this list regardless. A change in performance resulting from previous experience (i.e., seeing the list of words) is known as *priming*.

The basic assumption underlying the use of indirect tests to detect malingering is that malingerers do not know the critical fact that amnesics show priming effects that are much the same as those of normals (Schacter, 1987). For example, an amnesic might not be able to recall seeing the word *elephant*, or even recognize the word as a list item, but he or she is likely to complete the word stem *ele*____ with the word *elephant*. The malingerers might therefore fake a priming deficit and score lower than would true amnesics.

Despite the appeal of implicit memory tests, Wiggins and Brandt (1988) were unable find evidence that malingerers would fake a priming deficit. They found that simulated malingerers did better than amnesics on a word stem completion task. Suggestions as to why they found this effect are discussed later. In contrast, Horton et al. (1992) found that uninformed simulators who were not told how amnesics should perform produced fewer target items than baseline items on fragment completion, in which certain letter are removed throughout a word (e.g., e_ep_nt), but not word stem completion, in which all but the first few letter are removed (i.e., ele__).

As of yet, these newer, more experimental tests have not proven to be much more effective in the detection of malingering than psychometric test batteries. The basic assumptions on which both the forced-choice tests and the Rey-15 Item Memory Tests are based are violated more often than they are supported. Malingerers may know that amnesics do not perform below chance on forced-choice tests, and may realize that

the Rey is easy for even true amnesics. However, research concerning implicit memory tests seems promising. The basic logic of implicit memory tests is perhaps sophisticated enough not to be easily "figured out" by malingerers. Nevertheless, there are some common problems due to subject factors plaguing malingering research in general.

Subject Influence on Malingering

Simulated malingerers are experimental participants who are asked to fake a bad memory. Most studies of malingering assume, often implicitly, that simulated malingerers actually malinger and that any lack of success in correctly classifying these malingerers lies solely in the test they used (Bickard et al., 1991; Brandt et al., 1985; Horton et al., 1992 Martin et al., 1993; Schretlen et al., 1991; Wiggins & Brandt, 1988). The test may well be part of the problem, but the few studies that have tested whether their simulators actually malingered found that uncooperative simulators, or those uninformed about amnesia, might have been a contributing factor (Bernard, 1990; Heaton et al., 1978; Goebel, 1983).

For instance, Heaton et al. (1978) found that 20% of their simulators did not malinger (i.e., they had normal scores on the tests) and were consequently dropped from the study. They did not attempt to find out why these participants did not malinger. Likewise, Goebel (1983) found that, when asked in a debriefing interview, 10% of his simulators admitted that they did not malinger because they were either too honest (e.g., they felt that malingering on a memory test is immoral) or too motivated to do well on the task. Bernard (1990) also reported the same problem. For example, one of his participants did not even try to malinger and another declined to participate after having been asked to malinger. He suggested that "a certain percentage of participants will not (or may be unable to) simulate malingering" (p. 726).

Some researchers have used money as an incentive for simulators to malinger. Bernard (1990) offered $50 to the two best malingerers, but this incentive did not affect the participants' performance when compared to the malingerers who were not given any incentive. Heaton et al. (1978) offered an extra $5 (in addition to the $25 they received for participating) to all of their simulators contingent on successful faking and, as mentioned above, 20% did not malinger. Another study (Martin et al., 1993) offered $2 to members of one group of malingerers while offering no incentive to the members of the other group and found no difference in malingering success between the two groups. One problem with this study was that the monetary reward was not contingent on successful malingering (i.e., participants would receive the $2 whether they malingered or not); therefore, participants had no real incentive to malinger. In general, monetary incentives are not only expensive, but they are apparently ineffective as well.

Some studies have examined whether an informed simulator will malinger more than an uninformed simulator. Informed simulators are those who have been given some or all of the following types of information: (1) what is the nature of the test, (2) how does an amnesic typically perform on the test and (3) what are the characteristics of amnesia in general. For example, Horton et al. (1992) gave their informed simulators information about how to perform on the test (i.e. that amnesics' performance on the word completion and fragment completion tasks would not differ from that of normals). They found, on the fragment completion task, that both controls and informed simulators completed more target than baseline items, just as a true amnesic would, while uninformed simulators completed more baseline than target items, a pattern which would seem to indicate malingering. Similar results were found for the word completion task. They concluded that an informed malingerer (i.e., one who knows how an amnesic

would perform) could "beat" the tests and be classified as an amnesic, while an uninformed malingerer could not. In order to explain the discrepancy between their results and those of Wiggins and Brandt (1988), who found no malingering on their implicit memory test, Horton et al. suggested that Wiggins and Brandt`s uninformative instructions (which only asked the simulators to "perform on any tests the way you think a person with amnesia would do it" [p. 76]) could account for their results. Whereas Wiggins and Brandt's data showed that malingerers did not "fake" on a word-stem completion test, Horten et al. demonstrate that changing the instructions to include information about the test resulted in their uninformed simulated amnesics completing fewer target than baseline items.

Another study (Baker et al., 1993) examined the difference between simulated malingerers who had attended a lecture on organic amnesia and simulated malingerers who had not heard the lecture, but this study found no difference in success of malingering. One possible explanation for this finding is that, although the simulators had attended the lecture, they may not have remembered the information, or they ability to malinger was not enhanced by the information. In any case, the researchers suggest that it would have been relevant to determine whether the simulators remembered information given at the lecture.

The "informative" instructions in these studies have somtimes given the simulators clues to help them malinger more effectively on those particular tests, and sometimes given them information on amnesia without testing for retention of this information. No studies have given simulators information about both the characteristics of a genuine amnesic and the motivations and experiences of a "real-life" malingerer. The present study attempts to increase malingering in an experimental setting by doing

the following: (1) simulators were given a detailed scenario describing a genuine malingerer's experiences and motivations, (2) some characteristics of the malingerer's supposed amnesia were described, and (3) the participants "practiced" at acting like a malingerer by answering relevant questions. Also included in this procedure was a screen to measure whether the participants understood the instructions.

Method

Participants

Participants were 72 undergraduate psychology students attending Louisiana State University who volunteered in exchange for extra credit in a psychology course.

Procedure and Design

Participants were tested in groups of 10 or fewer individuals. Participants were randomly assigned to one of four groups: malingerers with detailed instructions (d-malingerers); malingerers with simple instructions (s-malingerers); malingerers with simple instructions plus "attention" (s+a-malingerers); and controls who received no malingering instructions.

The s-malingerers were given simple malingering instructions that directed them to take the tests as they believed a person with amnesia would. In order to make these data comparable to previous studies, these instruction were patterned after those of Wiggins and Brandt (1988) and Baker et al. (1993), which are typical of studies using simulated malingerers.

The d-malingerers were given detailed instructions that asked them to take the role of a person who was involved in an automobile accident. The instructions included a scenario that described the memory loss, and subsequent recovery, of such a person as well as the motivations which might lead a person to fake a bad memory to gain

financial compensation. The instructions are given in full in Appendix A. These instructions were followed by a questionnaire. This questionnaire consisted of questions designed not only to assess whether the participants understood the role they were to undertake (that of a malingerer) but also to give the participants an opportunity to practice that role. The questions evaluated the participants' understanding of the difference between short and long-term memory. The questionnaire is given in full in Appendix B. It was important that participants understood that, based on the instructions, they were to fake anterograde amnesia (i.e., they would be unable to remember new information) rather than retrograde amnesia (i.e., they would be unable to remember information from their past). The questionnaire also asked such questions as "How much money do you stand to win?" so that they would be able to practice the role of a malingerer. The questionnaire was completed by most participants in about 5 min.

The s+a-malingerers were identical to the s-malingerers except that they were asked to draw a map of the United States instead of the scenario and questionnaire. They were given about 5 min to complete this tasks. This group was added to the study to control for the fact that d-malingerers spend more time in between the instructions and the tests and receive more attention from the experimenter than do the s-malingerers. Note, if the d-malingerers and the s+a-malingerers were both more often classified as malingerers than the s-malingerers and the controls, then it could be suggested that spending an extra 5 min with the experimenter in between instruction and testing was the critical factor rather than the detailed instructions and the questionnaire.

Controls completed both tests with no malingering instructions and were simply

told to "do their best".

Participants in each group took the WCMT followed by the Rey 15-Item Memory Test. Participants in the malingering groups were asked to describe their strategy for faking a bad memory at the end of the experiment.

Measures

Word Completion Malingering Test. The Word Completion Malingering Test (WCMT) consists of two lists of 30 common words. The participants read and copied each word. They also rated the words for pleasantness on a scale of 1 to 7. The purpose of these ratings was to ensure that the participants were attending to and thinking about the words, rather than just copying them. Previous research has shown that pleasantness rating leads to a relatively high level of recall (e.g., Craik & Lockhart, 1972). The participants then took the first of two word-stem completion tests. In this first test, termed the Inclusion Test, participants saw 30 word-stems and were told to complete each stem with a word from the list. They were told that if they were unable to recall a word from the list, they should complete the stem with another word. Participants were required to complete all stems.

Before the stems were completed, but after the pleasantness rating task, the participants were told that a person with a good memory would complete the word stems with words from the list. Participants then saw a practice list of words and the responses of three hypothetical persons. The correct answers for these persons were circled so that the participant could readily see which of the three completed more stems with words from the practice list. The participants were asked to circle the name of the person with the best memory (in this case, the one with the most responses from the list). This practice test was included in the WCMT to make what constitutes a good

memory on this test more obvious to the participant.

Word List:

automobile	locomotive
taxi	motorcycle
airplane	unicycle
bicycle	tricycle
ship	boat

Student A	Student B	Student C
automatic	automobile	automatic
local	local	local
taxes	taxi	taxi
motive	motorcycle	motive
airball	airball	airplane
unicycle	unicycle	uniform
bicycle	bicycle	bicker
tricycle	tricycle	trick
shingle	ship	ship
boast	boat	boat

Fig. 1. Practice word list and responses of hypothetical persons on the WCMT

In the second test, the Exclusion Test, participants were told to complete the stem with words that were not on the list. As in the Inclusion Test, participants were told that all stems must be completed. Before completing the stems, participants were told that completing the stems with words that were *not* on the list constitutes a good memory. Again, participants saw the practice list of words and the sample of three hypothetical persons. They then circled the name of the person with the best memory (in this case, the one with the fewest correct responses from the list) and moved on to the word-stem completion task. The Inclusion Test was always given first.

Rey 15-Item Memory Test. The Rey 15-Item Memory Test consists of a single card with 15 items (3 columns X 5 rows) that is shown for 10 s (Rey, 1964). The first row consists of uppercase letters (A B C); the second consists of the numbers 1, 2 and 3; the third contains lowercase letters (a b c); the fourth contains a circle followed by a square and a triangle; and the fifth consists of the Roman numerals for I, II and III (see

Appendix C). Although subjects were told that they must memorize 15 items in a very short time in an effort to make the test seem hard, only a few concepts needed to be remembered. As mentioned in the introduction, Bernard and Fowler (1990) found that most people with no memory problems score above 9.

Results

Scoring the WCMT

Pilot data on the WCMT provided the following cutoff scores (LeCompte, Hilsabeck, & Van Camp, 1996). In light of ongoing data collection, these cutoff are subject to change. However, any change in these cutoff would not change the basic logic of this experiment. The general purpose of the WCMT is to classify experimental participants (in experimental situations) or people (in clinical situations) into three categories: amnesics, malingerers, and "normals" (those with no apparent memory deficit); however, this experiment only required that the participants be classified as either malingerers or non-malingerers (which included both amnesics and controls). The majority of the participants in this study who were classified as malingerers scored well below the cutoff for malingerers and all of those classified as non-maligerers scored well above the cutoff for non-malingerers. In short, potential changes in these cutoffs would only affect the classification of the three participants whose scores fell closer to the cutoff for malingerers. Even if these participants were to be reclassified, the results would essentially remain the same, and the conclusions drawn from these data would be unaffected.

The participants' Inclusion Test score (I score) minus their Exclusion Test score (E score) yielded an "R" score. Controls (those who take the test with no instructions to malinger) tend to get R-scores of at least 14 and I scores of at least 19. Because those

in the control group "do their best" on these memory tests, they usually complete many more word stems with words from the list on the Inclusion Test than on the Exclusion Test, which results in the high R score.

Participants who take the Inclusion and Exclusion Tests after 48 hours of having seen the list are called analog amnesics. Because of the long delay between seeing the lists and having to recall the words, they function as amnesics who had seen the list, but have forgotten most of the words. The WCMT contains words of high frequency; participants who had never seen the list have been shown to get some "hits" without even seeing the list (LeCompte et al., 1996). Ideally, analog amnesics would complete the stems with few words from the list on both the Inclusion and Exclusion parts of the test, but most importantly, they would have nearly the same number of correct responses on each. The delayed analog amnesics tend to have R scores ranging from 0 to 19, with the majority (94%) receiving a score of 3 or more. Specific cutoffs for true amnesics will be set after testing of true amnesics has been completed.

Malingerers (those who are asked to fake a bad memory on the test) should have an R score below 3. One obvious strategy for faking a bad memory on this test would be to do the opposite of what the test instructions say. As mentioned above, the test includes explicit statements about what constitutes a good memory on each part of the test. Therefore, malingerers should complete the stems with words that are not on the list for the inclusion part, and with words that were on the list on the exclusion part (this being the "exact opposite" strategy). This would yield a low I score and a high E score, which results in an R score that is much lower than that of analog amnesics, and presumably true amnesics.

Pilot studies for the WCMT have found that control and analog amnesics' scores

are fairly consistent while malingerers' scores vary a great deal, which could represent a misunderstanding of the relatively vague malingering instructions. Table 1 illustrates the rules used to classify participants into three categories (malingerers, control, and amnesic). For this study, participants will be classified as either malingerers or non-malingerers (including both controls and amnesics).

Table 1. Classification Rules for the WCMT

Rule 1	Rule 2	Rule 3	Rule 4
R < 3 = Malingerer	I < 8 = Malingerer	E < 4 = Control	I + E < 12 = Malingerer
R > 14 = Control	I > 19 = Control		

Scoring the Rey-15 Item

Participants who scored 7 or lower on the Rey were classified as malingerers. Some subjects wrote the correct responses, but in a different order or format (i.e., in one column rather than four columns) than that of the stimuli presented; however, correct responses were identified as such regardless of order or format.

Analysis

The Rey-15 Item was used to classify participants as malingerers or non-malingerers. The WCMT also classified participants into these two groups. If the detailed instructions helped the participants to malinger, then the number of participants correctly classified as malingerers should be greater for those who received the detailed instructions than for those who received the simple instructions (including both the s-malingering and s+a-malingering groups) and those receiving no malingering instructions. In short, correct classification should be associated with instructions given.

This hypothesis was tested by a Chi-squared test of association. The results of the classification of participants are given for both the WCMT and the Rey-15 Item separately. These values were placed in two contingency tables were used to compute

separate χ^2 values for the WCMT and Rey tests.

WCMT. As Table 2 shows, for the WCMT, 9 of the 18 d-malingerers were classified as malingerers. One participant in the s+a-malingering group was classified as a malingerer, and no participant in either the s-malingering or the control group was classified as malingerers. Correct classification was shown to be significantly associated with instructions given for the WCMT. Only 50% of the d-malingerers were classified as malingerers; however, this is a significant increase in malingering compared to the s-malingering and the s+a-malingering groups in which only 1 out of 36 participants were classified as malingerers. The χ^2 value for the WCMT is 26.48, which is unlikely to have occurred by chance, $p < .001$.

Table 2. Classifications on the WCMT

Classification	Controls	S-Malingerers	S+A-Malingerers	D-Malingerers
Malingerer	0	0	1	9
Non-Malingerer	18	18	17	9

Comparisons between pairs of groups were necessary to determine the factors which could explain the increase in some groups and not others. Comparing the results of the d-malingerers and those of the s-malingerers is necessary to determine if the detailed scenario and questionnaire significantly increased the number of correct classifications in comparison to simple instructions. For the WCMT, correct classification was associated with instructions given between the s-malingerers and the d-malingerers (χ^2=13.23, p< .001). This indicates that the scenario and questionnaire did increase malingering for the d-malingerers when compared to the s-malingerers.

Comparing the s+a-malingerers and the d-malingerers determines whether spending extra time with the experimenter, rather than the scenario and questionnaire

themselves, increased the percentage of correct classification. There was a significant difference between the s+a-malingerers and the detailed malingerers ($\chi^2 = 8.86$, $p < .01$), meaning that it is the scenario and questionnaire, not the extra time spent with the experimenter, that increased the correctly classification of the d-malingerers.

Finally, the control groups were compared to each of the malingering groups to determine whether any of the malingerers were correctly classified more oftenwhen compared to those who had received instructions to do their best. There was no significant difference between the control group and either of the simple-malingering groups, which indicates that the simple instructions were no more effective at producing significant malingering than was no malingering instruction. It is important to note that both simple-malingering groups (s-malingering and s+a-malingering) were virtually identical to the control group in that only 0 or 1 participants malingered in each group. However, there was a significant difference between the d-malingerers and the controls ($\chi^2 = 12$, $p <. 001$), indicating that the detailed scenario and questionnaire prompted the detailed-malingerers to malinger, whereas instructions not to malinger produced no malingering.

Rey-15 Item Memory Test. As Table 3 shows, for the Rey, 4 of the 18 d-malingerers were classified as malingerers. One s-malingerers was classified as a malingerer, and no participant from either the s+a-malingering or control groups was classified as a malingerer. Correct classification was also shown to be associated with instructions given for the Rey-15 Item. The χ^2 value for the Rey is 9.24, $p < .05$), which indicates that, there wasa clear effect of the detailed scenario and questionnaire on the successful malingering of the d-malingerers on the Rey.

Table 3. Classifications on the Rey-15 Item Test

Classification	Controls	S-Malingerers	S+A-Malingerers	D-Malingerers
Malingerer	0	1	0	4
Non-Malingerer	18	17	18	14

Again, comparing pairs of groups to each other establishes the factor which increased the correct classification of the d-malingerers. For the Rey-15 Item, correct classification was associated with instructions given between the s+a-malingerers and the detailed malingerers ($\chi^2 = 4.5$, $p < .05$), indicating once again that the scenario and questionnaire, rather than the extra time spent with the experimenter, were the factors that prompted more d-malingerers to malinger and therefore be correctly classified. There was again no significant difference between the control group and either of the s-malingering groups. Only 0 or 1 of the participants in the s-malingering, s+a-malingering and control conditions were classified as malingerers.

Discussion

The results of this experiment clearly demonstrate that those simulated malingerers who received the detailed scenario and questionnaire were more often correctly classified as malingerers than both simple-malingering groups (s-malingerers and s+a-malingerers). That both simple malingering groups were essentially identical to the control group suggests that the simple instructions were of little use in prompting experimental subjects to malinger.

One significant component of the scenario is the description of the type of memory loss that is to be "faked" by the malingerers. Specific examples clearly established that information from the past (retrograde amnesia) could be remembered, but new information (anterograde amnesic) could not. One possible explanation for the

lack of malingering in the simple malingering groups is that the participants were unaware of what was meant by "amnesia" and therefore did not realize that an individual suffering from amnesia would not be able to remember a list of words that had just been presented (see Gouvier, Presthodt, & Warner, 1988).

One of the primary purposes of the questionnaire was to determine if the malingerers could identify those examples of anterograde amnesia as symptoms that they were supposed to fake (as opposed to examples of retrograde amnesia). The questionnaire was given to all three malingering groups (Appendix B; underlined responses are those scored as correct). Only questions 2 (a-f) and 3 (a-d) were scored. For question 2 (a-f), participants were asked how likely they were to remember certain events if they were having memory problems. For example, the situation in 2a is remembering "meeting a friend's parents at dinner the night before". This is an example of anterograde amnesia, and should be scored as "not very likely" if the participant recognized that failing to remember a recent event was a symptom of the amnesia we were asking them to fake. A ranking of 1, 2, 3, or 4 was considered correct. For questions 3a-3d, participants were asked if they would pretend not to remember certain information if they were faking a bad memory. For example, question 3a asks if they would "pretend that you couldn't remember your parents' first names?". An answer of "no" would be scored as correct because this is an example of retrograde amnesia, which is not the kind of amnesia that was described in the scenario. Those participants who missed more than 2 of the 10 questions [2(a-f) & 3(a-d)] were considered not to have understood which type of amnesia they were to fake.

Of the 18 detailed malingerers, 15 answered all ten questions correctly, 2 missed either one or two questions, and only one detailed malingered missed more than two.

Evidently, all but one of the detailed malingerers understood that they were to fake anterograde, rather than retrograde, amnesia. On the other hand, neither simple malingering group (as a whole) was able to make this distinction. In the simple malingering group, of the 18 participants, 16 missed more than two questions and two participants missed exactly two. In the simple+attention malingering group, 13 of the 18 participants missed more than two, four missed exactly two, and only one made the cuff off (i.e., missed less than two). Had the participants who did not meet the minimum cutoff on this questionnaire been omitted in the classification process, 17 of the 18 d-malingerers would have remained in the analysis, while only 2 of the 18 s-malingerers and 5 of the 18 s+a-malingerers would have remained.

It is clear that the scenario supplied information on the type of amnesia to be faked, and that those participants receiving the scenario were able to identify examples of anterograde amnesia as those that represented the type of amnesia they were to fake. However, although 94% of the d-malingerers passed the questionnaire, only 50% were classified as malingerers on the WCMT, and only 22% were so classified on the Rey-15 Item. Of those in both s-malingering groups who did make the cutoff on the questionnaire, only one was correctly classified as a malingerer (Rey-15 Item). Although knowing what type of amnesia to fake improved the level of correct classification for the malingerers, it cannot be concluded that knowing what kind of amnesia to fake reliably leads to adequate faking (i.e. leading to correct classification).

Participants in all three malingering groups were asked "what was your strategy for faking a bad memory?" at the end of the experiment. The responses given could provide insight as to why they did not, or could not, fake amnesia. In the d-malingering group, 3 did not respond, 4 admitted that they either had no strategy or did not fake a

bad memory, and 11 participants reported having a strategy. Of those who reported having a strategy, 5 were classified as malingerers on the WCMT and 3 were so classified on the Rey. All three d-malingerers who did not respond were classified as malingerers on the WCMT, and two were so classified on the Rey. Interestingly, one of the participants who reported having no strategy was classified as a malingerer on the WCMT. In general, it seems that merely having a faking strategy is not indicative of succesfull malingering.

Strategies of those correctly classified as malingerers (on one or both tests) include doing "the opposite of whatever the doctor said", writing "the first thing that came to mind", and varying the answers and remembering important things from the past. One participant reported faking a bad memory on the pleasantness rating scale (and was correctly classified as a malingerer). Strategies of those incorrectly classified include trying "to be inconsistent with my answers", thinking "of a picture of events that coincide with the term or find a pattern", and faking on the questionnaire only. Of course, although potentially useful, participants introspections about their own strategies are faulty and should be treated with caution (Nisbett & Wilson, 1977).

For those participants in the simple-malingering groups (both s-malingering and s+a-malingering), 4 participants did not respond to the strategy question, 16 admitted to having no strategy, or not faking, and 16 reported having a strategy. Of those having no strategy, some "forgot" to fake amnesia, while other did not know how to fake amnesia. One participant reported that he or she "felt a stronger desire to complete the information correctly...must be the instinct learned while going to school" and another did not fake because he or she felt it was "silly". None of the s-malingerers who did not fake or have a strategy were correctly classified as malingerers on either test. Of those who

did report having a strategy, one was correctly classified on the WCMT and another was so classified on the Rey. Three reported strategies included forgetting things from the past, but not new information. This reiterates the point made earlier that s-malingerers did not seem to know to fake anterograde, rather than retrograde, amnesia. Other strategies of those who were not classified as malingerers include "acting like I didn't create a mental picture of these words when rating them", "not paying attention to the words given", "mixing up what I remembered to make it look like I couldn't remember how things went", and giving "the wrong answers to the question even though I know the right one".

Further research on the WCMT currently being conducted by the authors of this study also includes the strategy question (LeCompte et al., 1996). Some of the strategies reported (by those who are not correctly classified as malingerers) include faking on the questionnaire or pleasantness rating task only, pausing before writing a word from the list, and "looking confused". Clearly, some participants feel that certain behaviors and strategies, which most memory researchers and clinical neuropsycholgists would deem irrelevant in faking a bad memory, would be indicative of a bad memory. Some additions to the detailed scenario might alleviate this problem. Statements such as "pausing before writing down the correct answers is not a symptom of amnesia", and "having amnesia would not affect your ability to rate the pleasantness of words" might minimize the use of ineffective strategies, and perhaps encourage the use of effective strategies (although the latter comment is test-specific coaching and thus may weaken external validity).

One advantage of the questionnaire used in this study is that it can be used to "weed out" those participants who do not know to fake anterograde amnesia and

therefore presumably do not know how to fake a bad memory on the test in question. A second, post-experimental questionnaire could also weed out those participants who admitted to not even trying to fake amnesia. Such a questionnaire is currently being used by the authors of this study in research concerning the WCMT. It asks, "Did you fake a bad memory on the WCMT?". Those participants who answered "no" are automatically eliminated from the study, as are those who miss more than two questions on this study's pretest questionnaire. These questions allow the researchers to objectively disregard the data of those participants who did not understand that they were to fake anterograde amnesia or those who admitted to not faking.

The pilot data of 47 participants was analyzed using the same cutoffs discussed in this study. Disregarding the questionnaires, 66% of the malingerers were correctly classified as malingerers. However, when the 12 participants who did not meet the minimum criteria on one or both questionnaires were eliminated from the analysis, 74.3% of the remaining malingerers were correctly classified. Similar results were found with another group of malingerers. When 7 of the 40 malingerers were omitted from the analysis for not having met the minimum criteria, the number of malingerers correctly classified went from 65% to 75.8%. Participants' scores on the WCMT were not considered as an excusion criterion; that the participants did not meet the minimum criteria on one or both of the questionnaires was the only factor contributing to the decision to excluded them from the analysis. True malingerers do not refuse or forget to malinger, and they generally have an idea of what kind of amnesia they should fake; therefore, objectively excluding confused and uncooperative participants allows for a more externally valid set of data. It should be noted, however, that even if the scenario were able to prompt all simulators to adequately malinger, or if the questionnaires were

able to screen out all of those simulators who did not malinger, the tests involved are not perfect detectors of malingering; thus, some malingering will still be missed.

Although the current study classified participants as malingerers versus non-malingerers, the WCMT is designed to classify individuals as malingerers, amnesics, or normals. Of those 9 d-malingers who were classified as non-malingers on the WCMT, 6 had scores indicative of a normal memory, while 3 would have been classified as amnesics. Only one participant in the simple-malingering groups who did not malinger would have been classified as an amnesic. In a clinical setting, suspected malingerers whose scores imply that they have a good memory would not be able to claim they were genuine amnesics. The crucial problem is that some real malingerers may be able to "beat" the test and be classified as amnesics. However the WCMT has only been tested on analog amnesics. After data on real amnesics is collected, the current cutoffs may be adjusted accordingly, therefore making the test more exact in its classifications.

It is not clear why more participants were correctly classified as malingerers on the WCMT than the Rey. One possible explanation is that the presentation of the Rey after the WCMT might have made the Rey look easy in comparison, which would hinder the very logic of the test (that the Rey is an easy test, but it is presented as a difficult one to prompt malingerers to exaggerate memory loss). Bernard et al. (1993) found that placing the Rey before a battery of tests yielded significant differences between simulated malingerers and controls, whereas placing it after these other tests produced no such differences. However, the differences they found was between a mean score of 14.7 for the controls and 10 for the malingerers. If classified by a cutoff of 7, malingerers would not have been correctly classified regardless of the placement of the Rey.

Another argument could be that the Rey is simply not an adequate indicator of malingering. Studies involving simulated malingerers and "true" malingerers have found that the Rey does not "catch" a significant number of malingerers (Lee et al., 1992; Millis & Kler, 1995; Schretlen et al., 1991). Given that the WCMT "caught" twice as many malingerers, these data suggest that it may provide a superior method for detecting malingering.

In conclusion, this study has shown that a detailed and informative scenario, plus a questionnaire that allows participants to distinguish examples of anterograde amnesia, while allowing them to practice their role as a malingerer, prompts significantly more participants to malinger when compared to simple, uninformative instructions. Although this scenario does not prompt all, or even a majority, of participants to malinger, it does influence the malingering of some simulated malingerers. Suggested modifications could increase the scenario's effectiveness. In addition, questionnaires such as the one used in this study plus a post-experimental questionnaire could objectively identify those participants who cannot, or will not, malinger, thereby supplying the researcher with a somewhat more valid group of malingerers with which a malingering detection test could be evaluated.

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Appendix A

Detailed Scenario and Instructions

About a year ago, you were involved in an automobile accident. Although you did not suffer serious physical injuries, you initially suffered from memory problems and consequently filed a lawsuit to gain compensation for these damages.

You were able to remember all aspects of your past; however, you were unable to retain any new information. You often forgot conversations and events just minutes after their occurrence and you were unable to remember such simple information as a new phone number or a short grocery list.

As a result of these memory problems, you were not able to go to work and relationships with your family and friends began to suffer. In addition, most of your time was spent visiting doctor's offices at least twice a week. Your memory has since returned to normal. You still have not returned to work because you must continue to make a couple of doctor visits a week, as required by your insurance company and the lawyer handling your lawsuit. Your relationships have recovered and are actually improving. You have much more time to relax with your friends and family and have grown accustomed to your new work-free life.

Although your memory problems have disappeared, you feel that you should still be compensated for your earlier difficulties. The court has ordered you to undergo testing to uncover the extent of your memory problems. If you convince the court that your memory is still impaired, you stand to gain several million dollars, which would allow you to continue your new carefree lifestyle. You must now perform on these tests as you would have when you were actually having memory problems in order to convince the court that you must be awarded a large settlement.

Are there any questions?

Appendix 2

Questionnaire for the Detailed-Maligering Group

(Those answers underlined are those considered correct)

Before we test your memory, please fill out this questionnaire. It is based on the scenario you just read and is designed to verify that you understand the role you are taking. You should answer as if you are the person in the scenario. You may reread the scenario as many times as you wish.

1. How many times did you visit the doctor last month?

   _____

   _____

2. When you were having memory problems, how likely were you to:
   a. remember meeting a friend`s parents at dinner the night before?
   (not very likely) 1---2---3---4---5---6---7 (very likely)

   b. remember your best friend from high school?
   (not very likely) 1---2---3---4---5---6---7 (very likely)

   c. remember the plot to a sitcom you watched on TV after one hour had passed?
   (not very likely) 1---2---3---4---5---6---7 (very likely)

   d. remember the magazine article you read a few days ago.
   (not very likely) 1---2---3---4---5---6---7 (very likely)

   e. remember the name of your childhood pet?
   (not very likely) 1---2---3---4---5---6---7 (very likely)

   f. remember the details of a phone call you received after a few minutes?
   (not very likely) 1---2---3---4---5---6---7 (very likely)

3. If you were faking a bad memory, would you:
   a.pretend that you couldn't remember your parents' first names?
   Yes No

   b.pretend that you couldn't find a new restaurant because you forgot the directions given to you the day before?
   Yes No

c. pretend that you couldn't remember having ordered pizza when it was delivered to your door?
Yes No

d. pretend that you couldn't remember the yearly family vacations you went on when you were younger?
Yes No

4. How did your memory loss affect your personal relationships?

_____
_____
_____
_____
_____

5. How did your memory loss affect you professional relationships and ability to work?

_____
_____
_____
_____
_____

6. Now that your memory has returned and you are still not required to work, do you spend more time relaxing and enjoying life than you did before the accident? _____

7. Do you feel that you should be compensated for your initial memory loss, even though you memory has returned? _____

8. How much money do you stand to win?_____

9. How would you spend the money you could win in the settlement if you convince the court that your memory is still impaired?

_____
_____
_____
_____
_____

Thank you for filling out this questionnaire. You will now take the test required by the courts before you can be awarded your settlement.

Appendix C

Rey-15 Item Memory Test