The effects of motivation, coaching, and knowledge of neuropsychology on the simulated malingering of head injury

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Abstract

Two student groups, introductory psychology (n = 91) and advanced neuroscience (n = 34) undergraduates, were asked to malinger a head injury on Rey’s 15-Item Test (FIT) and Dot Counting Test (DCT). The participants were randomly assigned to one of three motivation conditions (no motivation given, compensation, avoidance of blame for a motor vehicle accident) and to one of three coaching conditions (no coaching, coaching post-concussive symptoms, coaching symptoms plus warning of malingering detection). Analyses revealed a Motivation × Student Group interaction on the FIT, indicating that the advanced neuroscience students, particularly when in the compensation condition, malingered the most flagrantly. On the DCT, main effects for motivation and coaching on the qualitative variables and a Motivation × Coaching interaction on the accuracy variables indicated that those in the compensation condition performed the most poorly, and that coaching plus warning only tempers malingering on memory tasks, not timed tasks.

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1. Introduction

Simulation experiments in the malingering of head injury have provided valuable information about how normal individuals would feign brain damage. It has been shown, for instance,
that malingerers generally overestimate the impairments associated with head injury (e.g., Coleman, Rapport, Millis, Ricker, & Farchione, 1998; Guilmette, Hart, & Giuliano, 1993; Iverson & Franzen, 1998; Mittenberg, Azrin, Millsaps, & Heilbronner, 1993), often display unusual error patterns on neuropsychological tests (Benton & Spreen, 1961; Osimani, Alon, Berger, & Abarbanel, 1997), produce more believable results on symptom checklists than on clinical tests (Martin, Hayes, & Gouvier, 1996), and perform worse on more obvious neuropsychological tasks than subtle ones (Bernard, McGrath, & Houston, 1996).

Despite limitations to their direct generalizability to clinical practice, simulated malingering experiments have contributed to the development of new measures to detect malingering (Davis, King, Bloodworth, Spring, & Klebe, 1997; Schagen, Schmand, de Sterke, & Lindeboom, 1997; Tombaugh, 1997), and have suggested the use of cut-off scores (Arnett, Hammeke, & Schwartz, 1995; Iverson & Franzen, 1996) and qualitative test profiles (Hiscock, Branham, & Hiscock, 1994; Iverson, 1995; Mittenberg, Theroux-Fichera, Zielinski, & Heilbronner, 1995) that inform practitioners and help them to detect “real world” malingering. There remain, however, methodological issues in simulated malingering studies which require standardization, and several variables whose impact on malingering behavior have not yet been investigated.

1.1. Motivation

Participants in simulated malingering studies are often given a role to play during the assessment. The description of the role may include the motive of the participant to fake a head injury. The typical motive is a hypothetical sum of money from a personal injury settlement, the amount of which has been demonstrated to be unimportant (Bernard, 1990; Martin, Bolter, Todd, Gouvier, & Niccolls, 1993). Alternately, several studies have used an “avoiding blame” motive in which participants were instructed to perform on tests in order to avoid “serious trouble” rather than gain compensation (Iverson, 1995; Iverson, Franzen, & McCracken, 1994); however, these studies did not employ a compensation group with which to compare their results.

A comparison of motivations is important as it has been shown that the scripts given to participants in simulated malingering experiments affect the manner in which the participants mangle (Arnett et al., 1995). Indeed, in clinical practice, the motivations for malingering head injury are myriad and if litigation scenarios can be considered analogous to experimental scripts, how different motivations affect neuropsychological test performance must be investigated. In non-experimental malingering studies, it has been shown that litigants perform more poorly on neuropsychological tests than similarly or more severely injured non-litigants (Binder & Willis, 1991; Lee, Loring, & Martin, 1992; Meyers & Volbrecht, 1998). Determining patterns of performance based on the type of secondary gain available to the participant or patient may ultimately be helpful in identifying malingering in clinical settings.

1.2. Coaching

Participants in simulated malingering studies may also be given “coaching” instructions on how to fake a believable head injury. However, simulated malingering research has not
employed terminology, such as “coaching,” in a consistent manner across studies, leaving unanswered questions about what should be included in a coaching manipulation. These inconsistencies may have obfuscated findings in several experiments.

“Coaching” has been construed as aiding participants (or patients) in their attempts to perform on neuropsychological tests as if they are head injured when they are not, or as if they are more severely head injured than they are. Coaching has been demonstrated to temper flagrant malingering behavior (Martin et al., 1993; Rose, Hall, & Szalda-Petree, 1995; Rose, Hall, Szalda-Petree, & Bach, 1998). That is, instruction on how real head-injured individuals behave is helpful to participants as they take neuropsychological tests in order to mimic a head-injured performance. However, most simulated malingering studies which have a “coaching” condition affix what might be considered a “warning” addendum to the instructions (i.e., “do not appear too obvious in your attempts or you will be suspected of faking”; “there are ways to detect faking on these tests”) (Arnett et al., 1995; Inman, Vickery, Lamb, Edwards, & Smith, 1998; Johnson & Lesniak-Karpiak, 1997; Killgore & DellaPietra, 2000; McKinney, Podd, Krehbiel, Mensch, & Trombka, 1997; Rose et al., 1995; Rose et al., 1998; Slick, Hopp, Strauss, & Spellacy, 1996; Suhr & Gunstad, 2000), and/or an explicit instructional set on how to perform in the testing situation overall or on specific tests (i.e., “do not answer difficult items correctly after failing easy ones”) (Hiscock et al., 1994; Inman et al., 1998; Rose et al., 1995; Rose et al., 1998).

Giving information about the symptoms of a head injury and giving explicit test-taking hints may not engender the same type of malingering performance. Indeed, Johnson and Lesniak-Karpiak (1997) and Suhr and Gunstad (2000) found that adding an explicit “warning” statement about malingering detection to their coached condition (which entailed a description of post-concussion symptoms) improved the participants’ scores. That is, the coached participants who were also warned performed better on the tests than the coached participants who were not warned. It may be that providing facts about head injury sequelae is qualitatively different from providing test-taking strategies, and these two variables should be separated and compared.

1.3. Knowledge of neuropsychology

A comprehensive knowledge of neuropsychology and the effects of head injury cannot be adequately “coached” in a short experimental vignette, although coaching provides specific information toward the goal of impaired neuropsychological test performance. Knowledge about head injury can range from that of the naive but coached participant to, presumably, that of the professionals who work with head-injured patients. However, it is unclear which group would provide more realistic neuropsychological test performance when asked to malinger a head injury.

Arnett et al. (1995) found that medical students performed more poorly on the 15-Item Test (FIT) than college students when asked to malinger a head injury. Hayward, Hall, Hunt, and Zubrick (1987) found that registered nurses who worked with brain injured patients performed more poorly overall on neuropsychological tests than the patients themselves when asked to malinger their patients’ performance. And Schwartz, Gramling, Kerr, and Morin (1998) found that physicians asked to malinger head injuries performed worse on the Wechsler Memory Scale (WMS) than attorneys asked to malinger, the attorneys more closely approximating the head-injured group’s performance.
These findings suggest that knowledge of neuropsychology may not be sufficient (nor even desirable) when attempting to malinger a head injury. Indeed, professionals who work with brain-injured patients may, in fact, “know too much.” That is, they may draw from salient experiences with moderately–severely brain-injured patients’ behavior and neuropsychological test performance when asked to duplicate head-injured behavior, consequently exaggerating their portrayal of the impact of a head injury.

Study participants’ pre-experimental levels of knowledge about head injury sequelae have not always been assessed in simulated malingering experiments, which leads to additional questions about how participants, typically undergraduates, should be selected for simulated malingering studies.

1.4. Current study

The current study was a simulated malingering experiment which compared three types of motivation given to the participants in the experimental vignettes (no motivation given, compensation, avoid blame) and three levels of a coaching manipulation (no coaching, coaching post-concussive symptoms, coaching symptoms and warning about malingering detection) in two groups of undergraduate students (introductory psychology, advanced neuroscience). Based on previous research, it was hypothesized that the group most able to realistically portray the mild head injury asked of them would be the introductory psychology students who were coached and warned. As there was little research to guide hypotheses about given motivation, the motivation manipulation was considered to be exploratory.

2. Method

2.1. Participants

One hundred and forty-four students from a liberal arts college were recruited from two populations; those who had taken introductory psychology but had not taken neuroscience ($n = 108$), and advanced neuroscience students who had taken introductory psychology, probability and statistics, research design, neuroscience, and neuropsychology ($n = 36$).

From the introductory psychology group, 15 students’ data were excluded due to having a neurological illness ($n = 2$) or reporting loss of consciousness in the last 5 years ($n = 13$). Two students’ data were excluded due to reporting in a post-experimental manipulation check that they did not minimally try to follow their faking instructions, leaving 91 (31 male and 60 female) participants. Two students were excluded from the advanced neuroscience group due to reporting loss of consciousness in the last 5 years, leaving 34 (8 male and 26 female) participants.

The participants were paid $5 for their participation.

2.2. Procedure

Each participant was randomly assigned to 1 of 10 conditions (one control and nine experimental conditions). They read their malingering instructions (see Appendices A–C) which
were adapted from Arnett et al. (1995), Rees, Tombaugh, Gansler, and Moczynski (1998), Rose et al. (1995), Rose et al. (1998), and Tombaugh (1997), paraphrased them, and then gave informed consent. The participants were then administered a one hour battery of neuropsychological tests, including two tests of malingering. Following the testing, the participants were administered a post-experimental manipulation check which, on a 5-point scale, assessed overall effort in malingering performance and confidence in achieving the desired result. Confidence in their performance on each individual test was also evaluated by asking whether or not the participant believed she/he performed “within the range” of a head-injured person.

2.3. Measures

2.3.1. Rey’s FIT

The FIT was developed to assess the validity of memory problems (Rey, 1964). The examiner tells the patient that she/he will need to memorize 15 different items, making the task appear very difficult. In fact, the 15 items are presented in five rows which all but the most severely impaired patients recall easily (i.e., A B C). A reliability coefficient of .88 has been reported (Paul, Franzen, Cohen, & Fremouw, 1992). Cut-off scores of 7 or fewer (Lee et al., 1992), 8 or fewer (Bernard & Fowler, 1990; Schretlen, Brandt, Krafft, & Van Gorp, 1991), 9 or fewer (Greiffenstein, Baker, & Gola, 1996), and 11 (Hiscock et al., 1994) items recalled have been suggested to determine incomplete effort. The accuracy variables of number of items recalled and number of items recalled in the correct positions were analyzed, in addition to the qualitative variables of number of new items added during recall, number of items rotated during recall, and number of perseverative responses.

2.3.2. Dot Counting Test (DCT)

The DCT is a test of dissimulation which presents stimuli of different difficulty levels in a random fashion to assess whether the patient’s responses and errors are associated with the task difficulty (Rey, 1941). The patient is shown two sets of six cards with varying numbers of dots on them and is timed while she/he counts the dots. The cooperative patient’s time pattern will increase as the number of dots increases. The first set of six cards have the dots randomly placed on the cards (ungrouped) while the second set have the dots grouped, which enable them to be counted more easily. Accuracy variables included number of grouped and ungrouped cards correct (each out of 6), and ungrouped and grouped pattern (scored as 0: times not in increasing order and 1: times in increasing order). The qualitative variables of ungrouped and grouped total time taken for the cards were also analyzed.

3. Results

The data were analyzed as a 2 Student Group (introductory psychology, advanced neuroscience) × 3 Motivations (no motivation given, compensation, avoid blame) × 3 Coaching Levels (no coaching, coaching post-concussive symptoms, coaching symptoms plus warning of malingering detection) design.
Gender distribution was not significantly different between the two student groups \( \chi^2(1, N = 125) = .65, \text{ns} \). The introductory psychology group was significantly younger \( (M = 19.18) \) than the advanced neuroscience group \( F(1, 108) = 44.29, P < .001, M = 21.06 \), therefore age was covaried in all analyses.

The FIT was analyzed using two multivariate analyses of covariance (MANCOVAs); one for the accuracy scores (number of items recalled, number of items recalled in correct position) and one for the qualitative scores (additions, rotations, perseverations). Age, confidence in overall performance and confidence in FIT performance were covaried. No significant main effects or interactions were found for the accuracy scores \( (P > .05) \) although it should be noted that the overall mean number of items recalled in correct position \( (M = 7.56, \text{S.D.} = 3.95) \) would have identified this sample as malingers by virtually all criteria. There was a significant Motivation \( \times \) Group interaction for the qualitative measures taken together \( F(6, 174) = 2.39, P < .05 \). Univariate analyses revealed that the interaction was significant for number of additions \( (P < .05) \). The advanced neuroscience students added significantly more new items during recall while in the compensation condition than did the introductory psychology students. No covariates were significant for either analysis. Means and standard deviations of the FIT addition variable are provided in Table 1. The interaction is presented in Figure 1.

The DCT was analyzed using two MANCOVAs; one for the accuracy scores (ungrouped number correct, grouped number correct, ungrouped time pattern, grouped time pattern) and one for the qualitative scores (ungrouped total time, grouped total time). Age, confidence in overall performance and confidence in DCT performance were covaried. It should be noted that the overall means for both ungrouped total time \( (M = 63.74, \text{S.D.} = 35.13) \) and grouped total time \( (M = 48.89, \text{S.D.} = 37.65) \) fell below the 25th percentile of the norms presented in Lezak (1995). There was a significant Motivation \( \times \) Coaching interaction for the accuracy measures taken together \( F(16, 257) = 1.73, P < .05 \). Univariate analyses revealed that this interaction was significant for ungrouped pattern \( (P < .05) \). Those who were in the coached and warned condition were more accurate in sequencing their time pattern than those in the other coaching conditions, except when simultaneously in the compensation condition, where they then performed as poorly as the other groups. Means and standard deviations for the DCT pattern variable are presented in Table 2. The interaction is presented in Figure 2. Confidence in how well the participant faked a head injury overall was a significant covariate \( (P < .05) \) in that confidence was inversely related to number correct in both ungrouped and grouped scores \( r(107) = -.23, P < .05; r(108) = -.19, P < .05 \).

<table>
<thead>
<tr>
<th>Motivation</th>
<th>Group</th>
<th>M</th>
<th>S.D.</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>None given</td>
<td>Introductory</td>
<td>.54</td>
<td>1.1</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Advanced</td>
<td>.73</td>
<td>1.68</td>
<td>11</td>
</tr>
<tr>
<td>Avoid blame</td>
<td>Introductory</td>
<td>.48</td>
<td>1.31</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Advanced</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Compensation</td>
<td>Introductory</td>
<td>.15</td>
<td>.46</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Advanced</td>
<td>2.0</td>
<td>2.94</td>
<td>10</td>
</tr>
</tbody>
</table>
Fig. 1. Motivation × Group interaction on the mean number of items added during recall on the FIT.

Table 2
Means and standard deviations of the DCT pattern variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Motivation</th>
<th>Coaching</th>
<th>M</th>
<th>S.D.</th>
<th>n</th>
</tr>
</thead>
<tbody>
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<td>.07</td>
<td>.28</td>
<td>13</td>
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<tr>
<td></td>
<td>Symptoms</td>
<td>.33</td>
<td>.49</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ Warning</td>
<td>.67</td>
<td>.49</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Avoid blame</td>
<td>None</td>
<td>.31</td>
<td>.48</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Symptoms</td>
<td>.38</td>
<td>.51</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ Warning</td>
<td>.67</td>
<td>.50</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Compensation</td>
<td>None</td>
<td>.25</td>
<td>.45</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Symptoms</td>
<td>.31</td>
<td>.48</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ Warning</td>
<td>.18</td>
<td>.40</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Grouped pattern</td>
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<td>None</td>
<td>0</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Symptoms</td>
<td>.17</td>
<td>.39</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ Warning</td>
<td>.18</td>
<td>.29</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Avoid blame</td>
<td>None</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Symptoms</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ Warning</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Compensation</td>
<td>None</td>
<td>.17</td>
<td>.39</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Symptoms</td>
<td>.18</td>
<td>.28</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ Warning</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td></td>
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</table>
Table 3
Means and standard deviations of the DCT time variable

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<th>Variable</th>
<th>Motivation</th>
<th>Coaching</th>
<th>M</th>
<th>S.D.</th>
<th>n</th>
</tr>
</thead>
<tbody>
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<td>39.08</td>
<td>17.64</td>
<td>13</td>
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<tr>
<td></td>
<td>None</td>
<td>Symptoms</td>
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<td>28.05</td>
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<tr>
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<td></td>
<td>+Warning</td>
<td>58.17</td>
<td>23.76</td>
<td>12</td>
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<tr>
<td></td>
<td>Avoid blame</td>
<td>None</td>
<td>53.72</td>
<td>17.39</td>
<td>13</td>
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<tr>
<td></td>
<td></td>
<td>Symptoms</td>
<td>56.68</td>
<td>27.56</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+Warning</td>
<td>96.14</td>
<td>46.91</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Compensation</td>
<td>None</td>
<td>50.30</td>
<td>16.67</td>
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<tr>
<td></td>
<td></td>
<td>Symptoms</td>
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<td>52.60</td>
<td>13</td>
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<tr>
<td></td>
<td></td>
<td>+Warning</td>
<td>76.23</td>
<td>34.48</td>
<td>11</td>
</tr>
<tr>
<td>Grouped time</td>
<td>None given</td>
<td>None</td>
<td>22.44</td>
<td>12.33</td>
<td>13</td>
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<tr>
<td></td>
<td>None</td>
<td>Symptoms</td>
<td>50.52</td>
<td>31.68</td>
<td>12</td>
</tr>
<tr>
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<td></td>
<td>+Warning</td>
<td>38.73</td>
<td>26.60</td>
<td>12</td>
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<tr>
<td></td>
<td>Avoid blame</td>
<td>None</td>
<td>39.90</td>
<td>22.05</td>
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<td>73.99</td>
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<td>Symptoms</td>
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<td></td>
<td>+Warning</td>
<td>66.46</td>
<td>52.35</td>
<td>11</td>
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</tbody>
</table>

Fig. 2. Motivation × Coaching interaction on the mean number of correctly ordered ungrouped patterns.
There was a main effect for motivation \([F(4, 174) = 2.55, P < .05]\) and a main effect for coaching, \([F(4, 174) = 2.72, P < .05]\) when both DCT qualitative variables (ungrouped total time, grouped total time) were taken together. Univariate analyses revealed that the main effect of motivation was significant for both ungrouped time \((P < .05)\) and grouped time \((P < .05)\). In both, those in the compensation condition took significantly longer than those in the control condition \((P < .05)\). Univariate analyses also revealed that the main effect for coaching was significant for ungrouped time \((P < .01)\). Both those in the coached and the coached plus warned conditions took significantly longer than those in the control condition \((P < .05)\).

Means and standard deviations for the DCT time variable are presented in Table 3.

4. Discussion

It appears that the motivation with which participants are provided in a simulated malingering study affects their performance on measures of malingering. Specifically, when given the motive of compensation, participants malingered more flagrantly, by adding more new items to their recall on the FIT, by missequencing their time patterns on the DCT, and by taking significantly longer on the DCT than the other motivation groups. Student group interacted with motivation on the FIT, suggesting that advanced neuroscience students malingered particularly flagrantly when the goal is to obtain compensation. Coaching appeared to have different effects on different aspects of the DCT. That is, those who were coached and warned appeared to temper their malingering by sequencing their time patterns more accurately than those who were only coached on symptoms; however, both those who were coached and those who were coached and warned took longer to complete their counting on the DCT than the controls.

4.1. Motivation

The finding that the motivation an individual has for malingering has an impact on the magnitude of his/her dissimulation, and specifically that those who are to gain compensation for their malingering malingered most flagrantly, has support from both the decision-making as well as the self-justification literatures. Than people are more willing to malinger in order to receive tangible gain than they are in order to avoid blame is consistent with decision-making research which suggests that people are more likely to take risks (i.e., malinger) when presented with an opportunity for gain (i.e., compensation) and are more risk-averse when presented with a potential threat (i.e., to be blamed for an accident) (e.g., Highhouse & Yuece, 1996).

Those who were instructed to malinger for compensation were told that the accident was another person’s fault, while those who were instructed to malinger to avoid blame were told that the accident was their own fault. Classic research on behavioral attributions and self-justification revealed that people who have external justification (i.e., compensation) would be more likely to lie (Festinger & Carlsmith, 1959) and cheat (Mills, 1958), particularly if they attributed their behavior as being due to another person’s negligent actions and not their own personal disposition (Aronson, 1999). In contrast, when people perceive themselves to be responsible for a situation and are offered no external justification, they would be much
less likely to mangle. It should be noted that these principles appeared to hold true in the current study even when the opportunity for gain or the external justification was hypothetical.

The hypothetical nature of the motivation manipulation and other experimental manipulations in malingering simulation research has been challenged for its lack of external validity. Rogers and Cavanaugh’s (1983) “malingering-simulation paradox” discussed the difficulties in generalizing from those who are asked to comply with directions to fake disability to those who fake disability when they are asked to comply effortfully with test-taking. Non-head injured college undergraduates and head injury malingerers in clinical settings may have fundamental differences between them that would affect the interpretation of experimental results, such as college students being less skilled at malingering, or being more likely to exhibit longer reaction times when asked to lie (Faust & Ackley, 1998). It is possible that characteristic differences between these groups may lead to misplacing importance on certain variables over others in the detection of malingering. However, characteristic differences between real and simulated malingerers are virtually impossible to determine given the customary lack of information we have about real malingerers. Given that, both Rogers (1990) and Faust and Ackley (1998) have suggested the convergence of experimental results with those from clinical settings, with the experimental research identifying “candidate variables” that could later be tested in clinical settings. Motivation appears to be such a variable.

4.2. Coaching

The current data suggest that coaching plays a complex role in the simulated malingering of head injury. Johnson and Lesniak-Karpiak (1997) and Suhr and Gunstad (2000) had found that adding an explicit “warning” statement to their coaching condition improved their malingering participants’ test scores on several neuropsychological tests, specifically those involving memory. In the current study, consistent with the hypothesis, coached and warned participants were also significantly better than the others at sequencing their time patterns on the DCT, suggesting a tempering effect of a warning, with the exception of when the participants were also in the compensation condition. In this condition, the warning appeared to be “nullified” and the participants performed as poorly as those in the other coaching conditions. The improved scores of those in the coached and warned condition were limited to DCT pattern accuracy, which requires memory for previous performance. This is consistent with previous research that has suggested that coached and warned participants are more likely to temper their malingering behavior on tasks involving memory (Johnson & Lesniak-Karpiak, 1997).

Indeed, Johnson and Lesniak-Karpiak (1997) found that warning did not affect speed performance on the grooved pegboard task, and in the current study, warning was not found to affect performance on DCT counting speed. The coached and coached plus warned conditions both performed significantly slower than the controls, indicating that a coaching manipulation is less likely to affect malingering behavior on tasks involving speed. An explanation for this in the current study is that, while the coaching instructions mentioned both memory and speed deficits as being part of post-concussion syndrome, the warning instructions only mentioned the exaggeration of memory deficits, possibly leading to the tempering of malingering only on tests involving memory. However, this does not account for others’ research findings. Johnson and Lesniak-Karpiak (1997) suggested that the availability of malingering strategies may me-
mediate this finding. That is, memory performance may be tempered by warning because of the numerous ways there are to fake poor memory which can be employed (i.e., speed of recall, inaccurate recall), while composite speed performance may be unaffected by warning due to the limited ways there are to fake psychomotor speed (i.e., slow down).

4.3. Knowledge of neuropsychology

Knowledge of neuropsychology was not a robust variable in the current study, but it interacted with motivation to suggest that knowledge of neuropsychology is actually a detriment to realistic malingering, which was consistent with the hypothesis. It appears that those with more knowledge about the brain, when trying to receive compensation, malingered the most flagrantly, indicating that those with more knowledge about the brain may, in fact, overemphasize the impact of a true mild head injury. This is consistent with Schwartz et al.’s (1998), Arnett et al.’s (1995), and Hayward et al.’s (1987) findings which suggested that, when asked to fake a head injury, those with the most knowledge about the brain malingered more flagrantly than lay people on neuropsychological tests. This may be because those who have more knowledge about the brain have tragic examples of true traumatic brain injury sequelae salient in their memories and portray those instead of the mild head injury asked of them.

It is also possible that knowledge of neuropsychology was not a robust variable because of two methodological issues. First, there was a relatively small number of participants in the advanced neuroscience group (n = 34), particularly considering they were distributed across 10 conditions. This may have hindered the ability to detect significant effects from student group. Second, the knowledge of neuropsychology variable had content overlap with the coaching variable. That is, coaching of symptoms of post-concussion syndrome may have, in effect, increased the participants’ knowledge of neuropsychology and may have, at least partially, nullified the effect of a “knowledge” variable. It is unlikely that a coaching manipulation would be equivalent to the five courses in psychology and neuroscience required of the advanced neuroscience participants, but it may have confounded the results.

5. Conclusion

It appears that the motivation study participants are given in a simulated malingering experiment affects their performance, with those given compensation as their motivation malingered the most flagrantly. Future research should add different motivations, such as attention-getting, to fully test the limits of this factor. Coaching also appears to have differential effects on malingering performance, depending on the type of neuropsychological test employed. The “number of ways to malinger” variable should also be attempted to be controlled. While warnings are still controversial in clinical practice (Youngjohn, Lees-Haley, & Binder, 1999), the experimental arena is the ideal place to investigate their effect on neuropsychological test performance. Finally, knowledge of neuropsychology has been shown to affect participants’ performance on neuropsychological tests when they are faking a head injury, knowledge having an inverse relationship with performance. Separating a knowledge of neuropsychology variable
from a coaching variable may be warranted in future research in order to avoid potential confounds.

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Appendix A. Control group

In this study you will be asked to complete several neuropsychological tests that are often used to measure a variety of changes that occur in people who have brain damage.

Please follow instructions carefully and complete each of these tests to the best of your ability.

Appendix B. Motivation

In this study you will be asked to complete several neuropsychological tests that are often used to measure a variety of changes that occur in people who have brain damage.

As you take each test, I would like you to assume the role of someone who has experienced some brain damage from a car accident.

B.1. None given

Pretend that you were involved in a head-on collision about 6 months ago. You hit your head against the windshield and were unconscious for 15 min. You were hospitalized overnight for observation and then released. Gradually, over the next few months you started to feel normal again.

B.2. Compensation

Pretend that you were involved in a head-on collision about 6 months ago that was not your fault. You hit your head against the windshield and were unconscious for 15 min. You were hospitalized overnight for observation and then released. Gradually, over the next few months you started to feel normal again.

However, your lawyer has informed you that you may obtain a large settlement from the court if you look like you are still suffering from brain damage.
Keep in mind that settlement monies depend on your being diagnosed as cognitively impaired.

B.3. Avoid blame

Pretend that you were involved in a head-on collision about 6 months ago that was your fault. You hit your head against the windshield and were unconscious for 15 min. You were hospitalized overnight for observation and then released. Gradually, over the next few months you started to feel normal again.

However, the driver of the other car was seriously injured in the accident and is suing you for a large sum of money. Your lawyer has informed you that you may avoid blame for the accident if you look like you are still suffering from brain damage, as juries tend to be more lenient on a disabled or suffering defendant.

Keep in mind that escaping possible financial and legal punishment depends on your being diagnosed as cognitively impaired.

When you take the following tests, try to mimic the performance of a person who is truly head injured to convince the examiner that you suffer from brain damage.

Appendix C. Coaching

In this study you will be asked to complete several neuropsychological tests that are often used to measure a variety of changes that occur in people who have brain damage.

As you take each test, I would like you to assume the role of someone who has experienced some brain damage from a car accident.

C.1. No coaching

C.1.1. Coaching post-concussive symptoms

Try to perform on these tests in such a way as to convince the examiner that you suffer from brain damage. To do this well, you should try to produce the most believable problems you can. People who have a head injury often experience post-concussion syndrome: headache, blurred vision, fatigue, dizziness, anxiety, irritability, and poor concentration and memory. In most people these symptoms last no longer than 1 month, but some people experience these symptoms for as long as 6 months to 1 year, post-injury. These people have some problems paying attention, remembering things, and learning new material well. They also think a little slower than they used to.

C.1.2. Coaching and warning (added to coaching post-concussive symptoms)

C.1.2.1. Motivation: none given. But do not make it obvious that you are faking. Major exaggerations, such as remembering absolutely nothing, are easy to detect. The tests are very sensitive to the symptoms of brain damage. Therefore, if you magnify your symptoms too much and they are too obvious, your testing profile will be detected as that of a malingering, not someone who is head injured.
C.1.2.2. Motivation: compensation: (added to motivation: none given). If your test profile looks like that of a malingerer, you will not win your lawsuit and you will not get anything for your injuries. In addition, you may be fined or jailed for lying in court.

C.1.2.3. Motivation: avoid blame: (added to motivation: none given). If your test profile looks like that of a malingerer, you will be held responsible for the accident and will face financial and legal consequences. In addition, you may be fined or jailed for lying in court.

References


