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The Differential Effects of Simulating Malingering, Closed Head Injury, and Other CNS Pathology on the Wisconsin Card Sorting Test: Support for the "Pattern of Performance" Hypothesis

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We investigated the effects of faking bad on the Wisconsin Card Sorting Test, comparing the performance of simulating malingerers (M; n = 24) to controls (C; n = 21), closed head-injured patients (CHI; n = 70), and patients with mixed CNS pathology other than CHI alone (CNS; n = 89). Stepwise discriminant functions achieved good accuracy (91–96%), sensitivity (58–100%), and specificity (92–100%) in differentiating simulating malingerers from these groups. The Categories score was a consistent significant independent discriminating variable. Categories alone could differentiate between the M and C groups. However, in discriminating between simulating malingerers and both CHI or CNS patients, more complex patterns of performance emerged, consisting of relatively poorer performance ratios on Categories compared to Perseverative Errors. This supported the Pattern of Performance theory of the effects of simulating malingering on neuropsychological tests, which holds that people simulating malingering do more poorly on obvious vs. subtle tasks compared to people with verified brain damage. Due to the difficulty of tracking one's performance on several different indices simultaneously, known patterns of performance for patients with verified brain dysfunction should be very difficult to fake, even with coaching.

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The present study is the most recent in a programmatic series investigating the effects of malingering on popular standardized neuropsychological tests. There are two long-term goals for this research series. One is to understand how malingering affects performance on a variety of widely used, standardized, objective neuropsychological tests and to produce a set of classification functions for each test that is specific to the type of differential diagnosis being made, for example, differentiating a suspected malingerer's performance from the effects of a closed head-injury versus other CNS pathology. The second goal is to determine if there is a common effect of malingering across tests of different neuropsychological functions that might aid in predicting its effects more generally.

Rogers, Harrell, and Liff (1993) critically reviewed attempts to study malingering on neuropsychological tests. They noted that, although the frequency of feigning deficits on neuropsychological tests may be quite high, neuropsychologists have performed well below chance in detecting simulated malingering of cognitive deficits. They outlined six strategies for detecting feigned neuropsychological deficits. Two of these strategies are the "Performance Curve" and "Magnitude of Error."

The Performance Curve strategy involves comparing performance on "easy" items with performance on "hard" items in a given test. The assumption is that malingerers cannot readily differentiate "easy" versus "hard" items and, therefore, make disproportionately more errors on the "easy" items, relative to their performance on the "hard" items. We have previously employed the Performance Curve strategy with the Wechsler Memory Scale — Revised (WMS-R; Wechsler, 1987) and were able to demonstrate that simulating malingerers tend to suppress performance on easy tasks, such as recognition, relative to their performance on harder tasks, such as recall (Bernard, 1990; Bernard, Houston, & Natoli, 1993).

The Magnitude of Error strategy involves looking at ". . . different patterns of incorrect responses among simulators . . . (by comparing) approximate answers (given by those with brain damage) to those which are grossly wrong (and presumed to be given by malingerers)" (Rogers et al., 1993, p. 261). This strategy assumes that the magnitude of the error of malingerers will be greater than that of patients who are, presumably, trying to come close to a correct answer. Rogers cites Powell (1991) as using this strategy to identify simulators who feigned schizophrenia.

Another possible malingering detection strategy would be to combine the use of the Performance Curve and Magnitude of Error strategies. This might be referred to as the "Pattern of Performance" strategy. We recently used this approach to discriminate between simulating malingering and closed head injury on the WMS-R (Bernard, McGrath, & Houston, 1993). This involved a linear discriminant function consisting of seven WMS-R subtests which, on crossvalidation, achieved a sensitivity of 79% and specificity of 80%. Along with Rogers (1988), we feel that discriminant function analysis and related analyses (e.g., regression analysis) provide an efficient means for objectively detecting malingering.

Discriminant function analysis offers several advantages relative to other methods: (1) it produces known rates of sensitivity and specificity; (2) it can be applied to popular, standardized tests that are already part of many neuropsychologists' repertoires and the results of which can also be used to evaluate brain functioning, if malingering is ruled out; (3) discriminant function weights can easily be applied to raw test scores, generating discriminant classification scores that compare an individual test taker to known research samples of malingerers and patients; (4) separate discriminant functions can be derived for different diagnostic groups (e.g., closed head injury vs. CVA); (5) discriminant analysis can compare complex patterns of performance that are difficult to recognize in univariate analyses; and (6) the "distances" between subjects' scores are simultaneously determined in the "discriminant space," which is analogous to determining the mean Magnitude of Error in responses in the combined pattern of performance.