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Effects of incentive and preparation time on performance and classification accuracy of standard and malingering-specific memory tests

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Abstract

The effects of incentive and preparation on performance and classification accuracy of standard and malingering-specific tests were investigated in a simulation study using a 2 (no incentive vs. a $20 incentive) × 2 (immediate vs. delayed preparation) factorial design. Eighty undergraduate students and 15 individuals with traumatic brain injury were administered standard (viz., Digit Span and Visual Memory Span from the WMS-R) and malingering-specific (viz., the Rey 15-Item Memory Test and the Multi-Digit Memory Test) memory tests. Preparation time was found to have a significant effect on performance and classification accuracy on a number of these tests, but incentive was found to have a significant effect on the performance but not the classification accuracy of one test (viz., the Multi-Digit Memory Test). These findings suggest that extra-test variables such as incentive and preparation time should be taken into consideration in evaluating the utility of standard and malingering-specific memory tests in detecting malingering.

Keywords: Malingering; Memory impairment; Memory tests

Neuropsychologists have used standard and malingering-specific tests to detect malingering of memory impairment. The classification accuracy of these various tests has been compared in simulation studies, in which some participants are asked to perform as a brain-injured person would. Although much is learned about the utility of these tests from the results of simulation

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studies (see review by Vickery, Berry, Inman, Harris, & Orey, 2001), recent evidence suggests that the classification accuracy indices of these tests may be affected by extra-test variables such as monetary incentives and opportunity to prepare before testing (Bianchini, Mathias, & Greve, 2001).

Studies by Frederick, Sarfaty, Johnston, and Powel (1994) and Orey, Cragar, and Berry (2000) found that monetary incentives of $20.00 and $25.00, respectively, had a significant effect on performance on both malingering-specific and standard neuropsychological tests, and affected the proportion of simulators (sensitivity) and non-simulators (specificity) correctly classified. Martin, Bolter, Todd, Gouvier, and Niccolls (1993) found that providing simulators with information about how to minimize being detected significantly affected performance on a malingering-specific test, the Multi-Digit Memory Test (MDMT), and lowered classification accuracy of the test. Martin, Hayes, and Gouvier (1996), however, failed to find such an effect and hypothesized that insufficient time had been allowed for participants to process the information provided.

Time is an important factor in clinical neuropsychological testing, because a considerable period can elapse between an event such as a motor vehicle accident and the patient being seen by a neuropsychologist. The present study examined whether time to prepare before simulating memory loss affected performance on, and the classification accuracy of, a number of commonly used standard and malingering-specific memory tests. Participants were tested either immediately after instructions to simulate, the typical procedure in studies of this kind (e.g., Guilmette, Hart, Giuliano, Leininger, 1994; Iverson & Franzen, 1998; Johnson & Lesniak-Karpiak, 1997; Rose, Hall, Szalda-Petree, & Bach, 1998) or one week later. Incentive was manipulated as a second independent variable to examine possible interactions between preparation time and incentive.

To ensure participants were adequately informed, all were provided with a context and a reason for the simulation and were told of the type of deficit to simulate. For reference, a group of participants with TBI and known memory impairment was included.

1. Method

1.1. Participants and design

There were 95 participants: 80 undergraduate psychology students who participated in the study for course credit and 15 volunteers with TBI recruited from a community rehabilitation centre.

The student sample comprised 50 females who ranged in age from 16 to 52 years ($M = 24.7$ years, S.D. $= 9.0$ years) and 30 males who ranged in age from 18 to 44 years ($M = 27.4$ years, S.D. $= 8.3$ years). None had a history of TBI or other neurological conditions. The 80 students were allocated in equal numbers to one of four conditions determined by crossing two levels of the preparation time variable (immediate and delayed) with two levels of the incentive variable (no incentive and incentive).

The TBI sample comprised 13 males and 2 females. The females were aged 20 and 27 ($M = 23.5$ years, S.D. $= 5.0$ years) and the males ranged in age from 16 to 51 years