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# Detecting malingering on the WAIS-III Unusual Digit Span performance patterns in the normal population and in clinical groups

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## Abstract

In several studies, suppressed Digit Span performance has been proposed as a potential marker for deliberately poor performance in a neuropsychological evaluation. The purpose of this study was to document Digit Span performance patterns in the Wechsler Adult Intelligence Scale—Third Edition (WAIS-III; Wechsler, 1997) standardization sample and selected clinical groups. Base rate tables were generated for the Digit Span scaled score, longest span forward, longest span backward, and the Vocabulary–Digit Span difference score. Cut-off scores for suspecting negative response bias were proposed, and clinical case examples were used to illustrate these scores.

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*Keywords:* WAIS-III; Malingering; Digit Span

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## 1. Introduction

It has been demonstrated repeatedly that persons who are faking memory problems, or who are presumed to be exaggerating, often suppress their performance on the Digit Span subtest of the Wechsler Adult Intelligence Scale—Revised (WAIS-R; Wechsler, 1981) or the Wechsler Memory Scale—Revised (WMS-R; Wechsler, 1987). In an early study, Bernard

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(1990) demonstrated that analog malingering subjects reduced their performance on this test. Binder and Willis (1991) reported suppressed Digit Span performance in a group of patients with mild head injuries who were involved in litigation and who were identified as providing negatively biased responding on the Portland Digit Recognition Test, a forced-choice digit recognition procedure. Trueblood (1994) also reported suppressed Digit Span performance in a clinical sample of suspected malingerers.

In two experimental malingering studies (Iverson & Franzen, 1994, 1996), undergraduates, Federal prison inmates, and psychiatric inpatients were instructed to fake memory problems within the context of personal injury litigation. The subjects who were instructed to mangle performed more poorly than patients with acquired brain damage and documented memory impairment. Cut-off scores for suspecting malingering were provided for the greatest number of digits recalled forward or backward (i.e., the maximum span), and for the age-corrected scaled score (Iverson & Franzen, 1994, 1996). Age-corrected scaled scores lower than 5 (Greiffenstein, Baker, & Gola, 1994) or 4 (Iverson & Franzen, 1996) have been reported as suspicious for biased responding.

Mittenberg and colleagues discovered that the suppressed Digit Span performance relative to Vocabulary subtest performance on the WAIS-R could be used as a suspicion index for biased responding. Nonlitigating patients with head injuries ( $N = 67$ ) were compared to matched community control subjects who were given instructions to mangle within the context of personal injury litigation. Large Vocabulary–Digit Span difference scores were rare in the patients with brain injuries, yet relatively common in the analog malingerers (Mittenberg, Theroux-Fichera, Zielinski, & Heilbronner, 1995). Millis, Ross, and Ricker (1998) reported an overall correct classification rate of 79% when using the Vocabulary–Digit Span difference score to classify nonlitigating patients with moderate or severe traumatic brain injuries and litigating patients with mild head injuries who were believed to be providing nonoptimal effort.

Very poor performance on Digit Span is relatively uncommon in patients with numerous different types of damage to the structure or function of their brains. Although it is possible to show poor performance on Digit Span following brain impairment, it has been demonstrated over the past four decades that many severely memory-impaired Korsakoff, encephalitic, and surgical patients obtain Digit Span scores in the grossly normal range (Baddeley & Warrington, 1970; Cermak & Butters, 1972, 1973; Drachman & Arbit, 1966; Warrington & Weiskrantz, 1973). Historically, Miller (1956) defined the normal range for Digit Span forward as a maximum span of  $7 \pm 2$  digits. As will be shown in this article, this estimate is reasonably accurate, although the range is too broad. Patients with memory impairment often perform toward the lower end of the distribution (i.e., five to six digits). Black (1986) studied a sample of 162 patients with brain lesions resulting from numerous etiologies and reported a mean Digit Span forward of 5.9 (S.D. = 1.4) and a mean Digit Span backward of 4.0 (S.D. = 1.3).

As a marker for biased responding, it is presumed that potential malingerers may not realize that Digit Span abilities often are relatively preserved in patients with brain impairment. Therefore, severely deficient performance may be indicative of exaggeration, especially when this performance is obtained from an individual with a mild head injury. The purpose of this study is to document WAIS-III Digit Span performance patterns in the standardization sample and in selected clinical groups. These tables can then be used for interpreting unusual Digit Span performances from persons involved in litigation.

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