



Criterion validity of low intelligence scale of the Sims

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Abstract

Objective: The Structured Inventory of Malingered Symptomatology (SIMS) is a widely used test. We evaluated the criterion validity of SIMS Low Intelligence scale (LI). Our previous study showed that the LI scale consists only of arithmetic tasks, logical tasks and tasks evaluating general knowledge and no tasks assessing non-verbal intelligence. None of these tasks appeared suited to differentiate malingerers from patients with cognitive impairment such as impairments documented in survivors of high impact car accidents.

Method: We used ANOVA to compare SIMS LI scores from four samples: 23 survivors of high impact motor vehicle accidents (MVA), Capilla Ramírez's data of 30 persons instructed to malingering whiplash symptoms, Parks's data of 26 undergraduates instructed to feign post-concussive symptoms and data of 34 normal controls published in SIMS manual.

Results: In the ANOVA, LI scores of the 23 injured survivors of high impact MVAs were significantly higher than scores of 30 malingerers of whiplash and of normal controls, but they were not significantly different from Parks's malingerers of post-concussive symptoms, i.e., from malingerers of cognitive impairment.

Conclusions: Patients with intense post-concussive symptoms are likely to obtain LI score levels similar to persons instructed to malingering post-concussive symptoms. Both the legitimately injured patients and the malingerers of post-concussive symptoms are likely to score higher on the LI scale than normal controls. This is further evidence that the SIMS and its scales constitute a pseudo psychological test without capacity to differentiate malingerers from legitimate patients.

Keywords: malingering, cognitive impairment, low intelligence, criterion validity

1. Introduction

The Structured Inventory of Malingered Symptomatology (SIMS)^[1] is a 75 item True-False questionnaire developed by a psychology student, Glenn Smith at the University of Missouri – St. Louis and was first published about 2 decades ago by Smith & Burger^[2]. It consists of 5 scales with 15 items each: Neurological Impairment (NI), Amnesic Disorder (AM), Psychosis (P), Affective Disorders (AF), and Low Intelligence (LI). Recent content analyses via ratings by teams of clinicians with more than 35 years of experience in clinical psychology or psychiatry showed that none of SIMS scales contains items with a capacity to differentiate legitimate patients from malingerers^[3,4,5,6]. The NI, AM, P, and AF scales of the SIMS are only lists of legitimate medical symptoms that may be endorsed with the same frequency by malingerers and by legitimate patients, albeit for different motives. The LI scale of the SIMS (see listing of LI items in Cernovsky *et al*)^[6] consists only of logical or arithmetic tasks or tasks measuring general knowledge and no non-verbal tasks. Hence, on all these LI tasks the malingerers of cognitive impairment and legitimate patients (e.g., those with post-concussive symptoms) may perform at similar levels, albeit for different motives.

The original validation of the SIMS^[1,2] was based on a fallacious assumption: a malingering test cannot be adequately “validated” only by comparing healthy undergraduates instructed to respond honestly to responses of healthy undergraduates instructed to feign medical or psychological symptoms. Such pseudovalidations do not

meet the test standards stipulated by the American Psychological Association^[7]. As already mentioned, the SIMS is only a list of medical symptoms and of cognitive tasks. Theoretically, such lists are likely to fail when comparing malingerers to patients with legitimate symptoms: both groups may report the same number of medical symptoms and thus score in the range of “malingering.”

The present study focuses on the criterion validity of SIMS Low Intelligence (LI) scale.

2. Method

SIMS total scores and LI scores were extracted from de-identified clinical file data of 23 survivors of high impact MVAs in which their vehicle was damaged so extensively that it was subsequently deemed not worthy of repair. Their age ranged from 19 to 60 years (mean age=38.0, SD=12.8) and their education from 10 to 18 years (mean=14.1, SD=1.9). The sample includes 8 males and 15 females. The age of their vehicle was known in 12 cases: on the average, the vehicle was 6.2 years old (SD=5.0). As reported in our previous publication^[5], their average scores were 17.2 (SD=11.0) on the Post-MVA Neurological Symptoms scale^[8], 37.4 (SD=13.2) on the Rivermead Post-Concussion Symptoms scale^[9], 6.3 (SD=1.3) on the average pain item of the Brief Pain Inventory^[10], and 23.7 (SD=3.0) on the Insomnia Severity Index^[11]. Their scores on the Insomnia Severity Index were known for 22 of the 23 patients: these scores were in the category of moderate insomnia for 6

patients (27.3%) and in the category of severe insomnia for 16 patients (72.7%). All patients in this sample could be classified as experiencing the post-concussion syndrome (scores ranging from 24 to 58 on the Rivermead scale)^[9].

All retained a lawyer to represent them to their car insurance company in disputes about insurance payments for treatments and other benefits. The number of weeks from the accident ranged from 7 to 217, with the average at 81.5 weeks (SD=55.8), however, all still experienced active post-accident symptoms. The physical nature of their accident (high impact, with the car damaged to the extent of being deemed not worthy of repair) makes the accusation of malingering less plausible, even though some distressed patients could strongly emphasize or overreport their symptoms in the fear of otherwise receiving no treatments or help.

The scores of our 23 patients on the Low Intelligence scale

of the SIMS ranged from 0 to 15 with the average at 4.8 (SD=4.4) and their total SIMS scores ranged from 9 to 60 with the average at 26.5 (SD=16.0), see Table 1.

Our study compared the SIMS LI scores of our 23 patients to SIMS LI scores of instructed malingerers and to the scores of normal controls. These 34 normal controls were presumably healthy undergraduates instructed to respond honestly (their data are reported on page 25 in the SIMS manual)^[11], see here their average SIMS LI score in Table 1. We also compared SIMS LI scores of our 23 survivors of high speed collisions to SIMS scores to Parks's^[12] SIMS data on 26 undergraduates instructed to feign post-concussive symptoms. These Parks's undergraduates were provided with a DSM4 based list of post-concussive symptoms to study. Thus, their task consisted in feigning cognitive impairment. Their SIMS LI scores are listed here in Table 1.

Table 1: mean SIMS scores and SDs of injured patients, controls, and of malingerers

<i>Samples:</i>	N	SIMS total	SIMS Low Intelligence
Normal Controls Widows & Smith ^[11]	34	7.7 (3.7)	1.4 (1.2)
High impact MVA patients Our original data ^[5,6]	23	26.5 (16.0)	4.8 (4.4)
Malingeringers instructed to feign post-concussive symptoms, i.e., also cognitive impairment Data from Parks's study ^[12]	26	26.2 (11.8)	3.4 (3.3)
Malingeringers instructed to feign whiplash symptoms (i.e., not cognitive impairment) Data from Capilla Ramirez's study ^[13]	30	16.4 (6.8)	1.7 (1.4)

Capilla Ramirez's team^[13] used the Spanish language version of the SIMS^[14]. Their article reports SIMS scores of 30 healthy persons instructed to malingering whiplash symptoms. These 30 healthy persons were instructed to feign the following whiplash symptoms: intense pain in the nape and in the rest of the neck, and in the shoulders, an intense dizziness that interferes with walking safely, headaches, fear, and irritability (in the original Spanish text "*dolores intensos en la nuca, el cuello y los hombros..... fuertes mareos que te impiden caminar con seguridad, dolor de cabeza, miedo e irritabilidad*")^[13]. It is important to note that persons in this group were not asked to feign cognitive problems. This was likely to result in lower scores on the LI scale than in Parks's malingerers who were instructed to feign post-concussive symptoms, i.e., also cognitive impairment, see Table 1.

We conducted an ANOVA to compare SIMS scores of the 4 groups listed in Table 1.

3. Results

As shown in Table 2, LI scores of the controls were not significantly different from those of the instructed malingerers of whiplash, i.e., those not instructed to feign cognitive impairment.

The LI scores of the controls were significantly lower than in instructed malingerers of post-concussive symptoms (i.e., of persons instructed to feign cognitive impairment) and also significantly lower than those of our 23 patients injured in high impact MVAs.

The instructed malingerers of post-concussive symptoms (i.e., those instructed to feign cognitive impairment) did not differ significantly in their LI scores from our 23 patients injured in high impact MVAs. This pattern of ANOVA results is statistical evidence that the LI scale of the SIMS lists items sensitive to cognitive impairment, not specific to malingering per se.

Table 2: ANOVA of SIMS Low Intelligence (LI) scores: post-hoc group comparisons

<i>ANOVA of LI scores: F=(3,109)=9.1, p<.0001</i>
<i>Tukey HSD Post-hoc Tests:</i>
Controls vs High impact patients: Diff=3.4000, 95%CI=1.4887 to 5.3113, p=0.0001
Controls vs Parks: Diff=2.0000, 95%CI=0.1556 to 3.8444, p=0.0280
Controls vs Capilla Ramirez: Diff=0.3000, 95%CI=-1.4733 to 2.0733, p=0.9711
High impact patients vs Parks: Diff=-1.4000, 95%CI=-3.4265 to 0.6265, p=0.2778
High impact patients vs Capilla Ramirez: Diff=-3.1000, 95%CI=-5.0621 to -1.1379, p=0.0004
Parks vs Capilla Ramirez: Diff=-1.7000, 95%CI=-3.5969 to 0.1969, p=0.0957

As reported in Table 3, an ANOVA on total SIMS scores for the 4 samples listed in Table 1 showed that total SIMS scores of the controls were significantly lower than those of the instructed malingerers of whiplash, and also lower than of malingerers instructed to feign whiplash symptoms, and also lower than of patients injured in high impact MVAs.

Table 3: ANOVA of SIMS total scores: post-hoc group comparisons

<i>ANOVA of SIMS total scores: F=(3,109)=23.6, p<.0001</i>
<i>Tukey HSD Post-hoc Tests:</i>
Controls vs High impact patients: Diff=18.8000, 95%CI=11.7542 to 25.8458, p=0.0000
Controls vs Parks: Diff=18.5000, 95%CI=11.7010 to 25.2990, p=0.0000
Controls vs Capilla Ramirez: Diff=8.7000, 95%CI=2.1629 to 15.2371, p=0.0041
High impact patients vs Parks: Diff=-0.3000, 95%CI=-7.7704 to 7.1704, p=0.9992
High impact patients vs Capilla Ramirez: Diff=-10.1000, 95%CI=-17.3329 to -2.8671, p=0.0023
Parks vs Capilla Ramirez: Diff=-9.8000, 95%CI=-16.7927 to -2.8073, p=0.0022

In this ANOVA, total SIMS scores of instructed malingerers of post-concussive symptoms did not differ significantly from the high impact MVA patients. In the ANOVA, instructed malingerers of whiplash had significantly lower total SIMS scores than instructed malingerers of post-concussive symptoms and also lower than the high impact MVA patients. The pattern of findings is consistent with the fact that the SIMS contains somewhat more items dealing with post-concussion syndrome than of items concerning whiplash per se, see the study by Cernovsky, Ferrari, and Mendonça [15].

4. Discussion

Our previous study (LI content study) determined conclusively that all LI items are only cognitive tasks on which injured patients such as those with post-concussive symptoms may perform more poorly than normal controls, and at levels similar to malingerers of cognitive impairment. This is confirmed by the results of our present ANOVA. Malingerers instructed to feign post-concussive cognitive impairment, as in the Parks's study [12] indeed obtained similar scores to our patients experiencing the post-concussion syndrome as shown by their Rivermead scores [9].

Together with results of our previous studies [3,4,5,6,15], our present ANOVA provides evidence that the SIMS is a false test devoid of capacity to differentiate malingerers from legitimate patients. The SIMS is certainly not a true test of malingering. Legitimately injured patients are too frequently misclassified as malingerers by this test. The SIMS is used often in insurance litigations with the nefarious results of falsely discrediting legitimately injured patients and unjustly depriving them of their lawfully due benefits.

5. Conclusions

The Low Intelligence (LI) scale of the SIMS lacks in criterion validity. It lacks in specificity as it does not differentiate patients with cognitive impairment from malingerers of cognitive impairment.

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