Flawed Studies of SIMS's Diagnostic Accuracy by Teams of Puente-López and Capilla Ramírez

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ABSTRACT

Background: The teams of Puente-López and Capilla Ramírez evaluated diagnostic accuracy of the Structured Inventory of Malingered Symptomatology (SIMS), a test often used to assess malingering by persons injured in motor vehicle accidents (MVAs). Yet all SIMS items represent legitimate medical symptoms, and more than 50% of them are those experienced by severely injured motorists, but they are fallaciously scored as indicative of malingering. Thus, more injured patients with more symptoms obtain higher SIMS scores for malingering.

Method: The studies by Puente-López and by Capilla Ramírez were carried out on SIMS scores of injured motorists. The present article assesses the severity of their injuries, as documented by Puente-López and by Capilla Ramírez.

Results and Discussion: The study by Capilla Ramírez's team excluded patients with pathological results on physical examinations, or on X-Rays, EMG, and MRI: thus, only mildly injured motorists were included. The patients of Puente-López had signs of only a mild cervical whiplash. Almost none reported lower back pain or dizziness. Thus, both studies included patients with only mild symptoms that resulted in very low SIMS scores: they scored within the non-malingering range as defined by the SIMS manual. Their scores were below SIMS scores of healthy persons instructed to feign whiplash symptoms from an MVA. The teams of Capilla Ramírez and of Puente-López erroneously interpreted these results as demonstrating diagnostic accuracy of the SIMS for detection of malingering in injured motorists.

Conclusions: The two studies of very mildly injured motorists fail to demonstrate "diagnostic accuracy of the SIMS" because the SIMS is mostly used by insurance contracted psychologists on more severely injured MVA patients (those with whiplash and post-concussion syndrome), i.e., those with more symptoms and thus, with higher SIMS scores that fallaciously classify them as "malingerers."

Keywords: malingering, SIMS, whiplash, car accidents.

Submitted : February 20, 2021

Published : March 14, 2021

ISSN: 2593-8339

DOI: 10.24018/ejmed.2021.3.1.730

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I. INTRODUCTION

The Structured Inventory of Malingered Symptomatology (SIMS) has been introduced in 1997 by Glenn Smith and Gary Burger.[1] The test has been extensively criticized in the last 3 years for several reasons, as follows.

SIMS items list and assess legitimate medical symptoms [2]-[5] but in an absurd manner, the SIMS counts them as indicative of malingering, see examples in Table 1. Some of these items are algebraic and logical tasks or those assessing general knowledge, i.e., tasks on which persons with post-concussion syndrome, or persons with low intelligence, or patients tired by a severe medical illness, or also psychiatric patients with thought disorder usually perform less well than

normal healthy controls: low performance on such tasks is falsely scored in the SIMS as indicative of malingering.

SIMS items are divided into 5 scales with 15 items each, that allegedly measure malingering of an Affective Disorder (AF), Neurologic Impairment (NI), Amnestic Disorder (AM), Low Intelligence (LI), and Psychosis (P), [6] see examples of the items in Table 1.

Items followed by a "T" in Table 1 are scored each one point towards the diagnosis of malingering if responded to with "True." If an item is followed by (F), it is scored with one point towards the diagnosis of malingering if responded to with "False." Thus, for instance, legitimately depressed persons who admit to feeling "depressed all the time" on SIMS Item 47, already obtain one point towards the diagnosis of malingering. Those who report frequent crying

also obtain one point towards the diagnosis of malingering, same as those reporting sleep difficulties.

TABLE 1: EXAMPLES OF SIMS ITEMS FOR EACH CONTENT CATEGORY OF MALINGERING

<i>SIMS scale of Affective Disorder (AF), examples:</i>
47. I am depressed all the time. (T)
23. I seldom cry. (F)
32. I have trouble sleeping. (T)
<i>SIMS scale of Neurologic Impairment (NI), examples:</i>
20. My major problem is that my brain is injured. (T)
44. There is a constant ringing in my ears. (T)
26. Walking is difficult for me because of my problems with balance. (T)
<i>SIMS scale of Amnesic Disorder (AM), examples:</i>
30. I have difficulty remembering today's date. (T)
27. I have difficulty remembering the day of the week. (T)
15. The major problem I have is with my memory. (T)
<i>SIMS scale of Low Intelligence (LI), examples:</i>
70. The major problem I am having is that things are hard for me to understand. (T)
41. I cannot count backwards from 20 to 1 without making a mistake. (T)
(Note: the LI scale also contains various logical and algebraic tasks on which patients with the post-concussion syndrome perform less well).
<i>SIMS scale of Psychosis (P), examples:</i>
62. In my visions, I often see parts of bodies covered with blood. (T)
28. I believe that the government has installed cameras in stop lights to spy on me. (T)
(Note: the LI scale also contains items describing various hallucinations or delusions and some items that could be endorsed by persons with "new age" beliefs, e.g., those concerning magical powers of plants).

Cerebral concussion is a brain injury. Motorists with the postconcussion and whiplash syndrome from an MVA obtain one point towards malingering for admitting to having a "brain injury" (see Item 20), another for reporting tinnitus (a frequent post-MVA symptom, see Item 44), and yet another one for reporting impaired balance (another common post-MVA symptom, see Item 26). Motorists with the postconcussion syndrome also obtain one point towards malingering for admitting to memory problems (Item 15), another point for reporting difficulty remembering which day within the week it is (Item 27), and yet another one for reporting difficulties remembering the date (Item 30).

Injured motorists who admit to relative difficulties comprehending things since their MVA (Item 70) obtain one point for malingering "low intelligence" and another such point if they admit to difficulties counting backwards (Item 41).

Intrusive images of MVAs with blood covered bodies (Item 62), as PTSD symptoms of injured motorists, are scored by the SIMS with one point towards malingering "a psychosis."

Severely ill psychiatric patients can misunderstand items of any of the 5 SIMS scales due to their thought disorder and delusions: they can obtain very high SIMS scores with the iatrogenic consequence of being subsequently denied pharmacotherapy as "malingerers." Thus, the SIMS might contribute to increasing numbers of undiagnosed mentally ill homeless persons in urban centers or those housed in jails.

The SIMS has been found to have extremely high rates of false positives, i.e., of legitimate patients misclassified as malingerers: 72% of legitimate psychiatric patients in a study by Richard Rogers's team,[7] 82.7% of war veterans

in a study by VA scientists led by Erika Wolf, [8] and 78.3% of patients injured in high impact traffic accidents.[9]

In professional psychology, new tests are supposed to be validated before they are used clinically. The validation is an experimental demonstration that the test indeed does what it is intended to do. Thus, a validation of a test purported to measure malingering would involve a demonstration that the test differentiates between genuine medical patients and malingerers who might report the same symptoms.

The SIMS manual published in 2005 by Widows and Smith[6] indicates that the test was validated, however, the perusal of these "validations" studies as described in the test manual shows that they consisted only of comparing of healthy college students instructed to respond honestly (i.e., persons unlikely to report medical symptoms and thus, unlikely to score high on the SIMS) to college students instructed to feign medical symptoms (i.e., to those reporting medical symptoms and thus, obtaining high SIMS scores). Such pseudoscientific procedures only demonstrate that the test separates reporters from non-reporters of medical symptoms, but not that it could separate malingerers from real patients, because both of these latter groups report medical symptoms [10].

The SIMS cannot identify which high SIMS scorers are legitimate patients and which are the feigners. The SIMS is misrepresented in "expert" psychological reports in legal litigations as a "symptom validity test," yet it has no capacity to determine whether any reported symptom is genuine or feigned.

In what situations would legitimate medical patients obtain lower scores on the SIMS than persons instructed to feign symptoms? Very mildly injured patients such as those with only minor injuries from motor vehicle accidents (MVAs) could indeed obtain lower scores on the SIMS than healthy persons instructed to (generously) feign whiplash and other MVA injuries. In such a case, the average SIMS score of only mildly injured patients might even be below the SIMS cutoff for malingering, unlike the scores of healthy persons instructed to feign whiplash and other post-MVA symptoms. The cutoff score is stipulated at > 14 points by the SIMS manual.

Given the lack of other than pseudoscientific validations of the SIMS, the teams of Capilla Ramírez [11] and of Puente-López [12] intended to properly validate the SIMS on injured motorists, by comparing their SIMS scores to those of instructed malingerers. Their samples of injured motorists obtained low SIMS scores, below the cutoff for malingering, and statistically lower than those of healthy persons instructed to feign whiplash injuries.

The present study evaluates if the patients of Puente-López and Capilla Ramírez perhaps sustained only mild injuries, those that cannot not result in SIMS scores above the cutoff for malingering. If this is true, then the studies by Puente-López and by Capilla Ramírez, would not be representative for MVA patients with more extensive and severe post-accident symptoms and their studies could not be interpreted as demonstrating diagnostic accuracy of the SIMS.

II. METHOD

The articles of the teams of Puente-López and Capilla Ramírez were reviewed with respect to inclusion or exclusion criteria that would determine the nature of their sample of patients and also to evaluate post-concussive and whiplash symptoms reported by patients.

III. RESULTS

A. Review of the SIMS Study by the Team of Capilla Ramírez

Capilla Ramírez, González Ordi, Santamaría Fernández, and Casado Morales [11] used the Spanish translation of the SIMS [13]. Their study compared SIMS responses of 30 uninjured healthy persons who were instructed to malingering whiplash symptoms from a motor vehicle accident (MVA) to SIMS responses of 47 genuine post-accident patients with cervical whiplash. The sample of these legitimate MVA patients, however, was strictly preselected as follows: “Inclusion criteria specified that all patients had the following: normal results in their physical examination; AP and lateral radiography not indicating changes in cervical spine (though patients with cervical hypolordosis were not excluded); EMG without clinical signs of radiculopathy; and finally, MRI without lesions that would justify the chronic pain complaints clinically presented by these patients.” (As explained in the original Spanish text: “Como criterios de inclusión, los pacientes debían cumplir los siguientes requisitos: poseer una exploración física AP y lateral sin alteraciones de la columna cervical, aunque admitimos la hipolordosis cervical; EMG sin signos clínicos de afectación radicular; y, finalmente, una RM sin lesiones que justificaran la clínica dolorosa crónica que presentaban los pacientes”) [11].

Thus, the 47 injured motorists presumably sustained only very mild injuries, given their normal physical examination, normal X-rays, normal EMG, and normal MRI. This alone may explain why their average total SIMS score remained below the cutoff for malingering, see Table 2.

TABLE 2: MEAN SIMS SCORES IN THE STUDY OF WHIPLASH PATIENTS BY CAPILLA RAMÍREZ ET AL

	Mean (SD)		Cutoff score as per SIMS manual
	Patients	Instructed Malingers	
SIMS total	10.4 (5.3)	16.4 (6.8)	14
AF scale	5.0 (2.2)	7.6 (2.0)	5
NI scale	2.3 (2.3)	5.3 (2.9)	2
AM scale	0.5 (1.1)	0.9 (1.5)	2
LI scale	2.3 (1.4)	1.7 (1.4)	2
P scale	0.3 (.6)	1.0 (1.7)	1

Furthermore, this study by Capilla Ramírez’s team focused on patients with cervical whiplash (in Spanish, “esguince cervical”). Whiplash, in a less narrow sense, can be conceptualized as a jolting trauma caused by abrupt and violent deceleration or acceleration of the vehicle during the collision, or of the patient’s body such as when a motorcyclist is ejected from his seat and sustains impacts against the pavement. Within this perspective, the whiplash associated disorder (WAD) can be subdivided into the one affecting primarily the cervical (WAD-C), or thoracic

(WAD-T), or lumbosacral spine (WAD-LS).[14] Lumbosacral whiplash (WAD-LS) has been noted frequently in more severe car accidents such as those involving car rollover, than in MVAs causing cervical whiplash (WAD-C) only [15].

A UK study by Robertson’s team suggests that thoracic whiplash (WAD-T) is frequently encountered in injured motorcyclists [16].

A recent Canadian study reviewed data of 158 motorists whose accident occurred, on the average about one year previously, but who all still required therapy for their symptoms. In that study, 71.5% of the patients had a whiplash injury both to cervical spine (WAD-C) and to lumbosacral spine (WAD-LS) [14]. If the Canadian data were restricted to include only patients with cervical whiplash (such as when wishing to avoid the confounding effect of pain from the lumbosacral region), then there would remain only 17.1% patients (those with whiplash injury to the neck only). Such small residual group is presumably less adversely affected by the MVA than whiplash patients with pain in more than one location [14]. It seems that the study by Capilla Ramírez’s team perhaps included patients primarily with cervical whiplash only.

As already explained, the 75 SIMS items are subdivided into 5 scales (15 items each) [6]. In addition to total SIMS score for malingering, the patient also obtains scores on each of the 5 scales to map the areas in which symptoms are (allegedly) feigned:

- Low Intelligence (LI) scale;
- Affective Disorder (AF) scale;
- Neurologic Impairment (NI) scale;
- Psychosis (P) scale;
- Amnesic Disorder (AM) scale.

If the interpretations given in the SIMS manual [6] for the 5 SIMS scales are taken seriously, then the majority of Capilla Ramírez’s legitimate post-accident patients would be classified as “feigning low intelligence” and “neurologic impairment” because their mean LI and NI scores are above the cutoffs stipulated by the SIMS manual: see the mean LI and NI scores here in Table 2. Since it has been shown that the LI and NI items assess legitimate medical symptoms [3], [4], it is clinically more judicious to interpret elevated LI and NI scores as reflective of post-accident neuropsychological symptoms such as impaired concentration (as shown by difficulties on LI items that represent algebraic or logical reasoning tasks) and also neurological symptoms of cervical whiplash listed in the NI scale such as tinnitus, numbness, paresthesia, or reduced muscular control over the limbs, and dizziness (legitimate symptoms listed in the NI scale, but fallaciously scored as indicative of malingering). An interested reader can consult the full text of all items of the LI scale and of the NI scale published elsewhere [3], [4].

According to the cutoff score stipulated by the SIMS manual for the AF scale, about a half of Capilla Ramírez’s legitimate post-accident patients would be classified as “feigning affective disorder” because their average score as a group was at the cutoff (score of 5.0 points, with the cutoff being 5). The AF scale consists exclusively of items descriptive of symptoms of depression or those associated with depression [2], but inappropriately scored as indicative

of malingering (see examples in Table 1). If the SIMS is administered to more severely injured motorists, those with more symptoms, they would obtain higher scores on the LI, NI, and AF scales.

B. Review of Puente-López's SIMS Study

As explained, the SIMS is a list of legitimate medical symptoms [2]-[5]. More than 50% of SIMS items describe neuropsychological symptoms typically experienced by injured motorists [17]. The present article examines whether or not the team led by Puente-López also based their conclusions on data from only very mildly injured patients, those with SIMS scores below the cutoff of > 14 points.

Puente-López, Pina, Ruiz-Hernández, and Llor-Esteban [12] statistically examined SIMS scores of the following four groups of persons:

- (1) 200 asymptomatic persons instructed to respond honestly,
- (2) 201 instructed malingerers (asymptomatic persons instructed to feign),
- (3) 195 patients evaluated after their motor vehicle accident (MVA),
- (4) 54 post-MVA patients who were classified by physicians as overreporting their post-accident symptoms.

The MVA patients of Puente-López, were evaluated by three physicians who *"assessed whether the patients' manifestation of their symptomatology was consistent with the anatomical-structural indicators observed or expected in the condition (pain severity, pain location, cervical movement range, active/passive joint balance, etc.)"*, see Puente López [12]. The three physicians then decided which of these MVA patients should be classified as "overreporting" and which as "non-overreporting."

Within the group of injured motorists classified as "non-overreporting patients," 95.5% *"were diagnosed with whiplash injury, the remaining 4.5% were also diagnosed with whiplash injury, but they also reported suffering from lower back pain. For overreporting patients, the diagnosis of whiplash injury was presented in 89% of the cases, and whiplash injury with lower back pain was made in 8% of the cases,"* see Puente-López et al. [12]. Thus, the word "whiplash" as used in the article by Puente-López presumably denotes mostly only cervical injury, i.e., WAD-C, rather than also WAD-LS or WAD-T.

As already explained, recent Canadian data indicate that as many as 71.5% of high impact MVA patients with a whiplash injury to the neck (i.e., to cervical spine, WAD-C) also experience lower back pain (whiplash injury of lumbosacral spine, i.e., WAD-LS) [14]. Post-accident patients who report neck pain only are usually those less adversely affected by the MVA than whiplash patients with pain that also involves the lumbosacral or thoracic spine.

As already mentioned, very serious types of car accidents such as those involving car rollover seem associated with larger proportion of lumbar than cervical injuries [15].

A yet another consideration that suggests the motorists in the study by Puente-López et al. sustained only relatively minor injuries is the low frequency of "dizziness" reported by those patients: *"none of the patients suffered neurological signs (Grade 3), except for 6 overreporting*

patients who claimed to have mild dizziness, 3 of them when moving their heads abruptly," see Puente-López et al. [12].

When patients injured in truly high impact MVAs are studied, as many as 70 to 80% of them may report "dizziness" [17], [18]. They would also frequently report other important post-concussive neuropsychological symptoms.

It appears that the team of Puente-López was misled by extravagant claims by some SIMS authors with respect to test statistics referred to as "specificity," i.e., proportion of legitimate patients not falsely diagnosed as malingerers. As noted by Puente-López et al. [12]: *"Various works have shown that the psychometric properties of the scale are adequate specificity = .98"* If this were indeed true, then only 2% of legitimate patients would be misdiagnosed as malingerers by the SIMS.

In contrast, SIMS specificity as reported by Richard Rogers for his sample of genuine psychiatric patients was only .28 (i.e., 72% of his patients were fallaciously branded as malingerers by the SIMS) [7]. Similarly, SIMS specificity reported by the team of VA scientists led by Erika Wolf on symptomatic war veterans was .17 (82.7% were misclassified as malingerers by the SIMS) [8]. A recent study of Canadian motorists injured in high impact MVAs indicated that the SIMS had only specificity of .22 (78.3% of patients were misclassified by the SIMS as malingerers) [9].

False estimates of SIMS specificity have been erroneously derived from comparing the difference in percent of scores over the cutoff of 14 points only between healthy college students instructed to respond honestly and those instructed to feign medical symptoms [1], [6]. For instance, the SIMS manual misrepresents SIMS specificity as .88 [6], but, in fact, this meant that only about 12% of the healthy college students responding honestly (i.e., not reporting a large number of medical symptoms) are misclassified by the SIMS as "malingerers."

In an absurd methodological omission, no legitimate medical patients were involved in calculating such high estimates of specificity: the proper scientific method would involve determining the proportion of legitimate patients classified falsely as malingerers by the SIMS.

The SIMS indeed performs well in differentiating reporters from non-reporters of medical symptoms (those listed in the SIMS) but has no capacity to reasonably differentiate malingerers from legitimate patients: both groups could report similar numbers of medical symptoms [9].

As already mentioned, more than 50% of SIMS items describe neuropsychological symptoms typically experienced by injured motorists [17]. Thus, more severely injured motorists obtain higher SIMS scores because they report more post-accident medical symptoms, compared to only mildly injured motorists [9]. Persons instructed to feign post-accident symptoms such as whiplash and concussion are likely to obtain higher SIMS scores than very mildly injured motorists. Thus, the total SIMS scores of mildly injured MVA patients might indeed remain below the SIMS cutoffs such as 14 points.

TABLE 3: TOTAL MEAN SCORES ON THE SIMS AND ON ITS 5 SCALES OF THE 4 GROUPS (PUENTE-LÓPEZ ET AL.)

	Mean scores (SDs)				SIMS cutoffs
	Normal control sample	Non-OR MVA patients	OR MVA patients	Instructed malingerers	
SIMS total	4.9 (2.8)	9.0 (3.0)	12.9 (4.1)	16.7 (6.5)	14
AF scale	2.3 (1.2)	4.2 (2.1)	6.2 (2.0)	7.4 (3.9)	5
NI scale	1.2 (0.7)	2.5 (1.2)	3.5 (0.8)	2.9 (1.0)	2
AM scale	0.5 (0.2)	0.0 (0.0)	0.0 (0.0)	2.4 (1.0)	2
LI scale	0.9 (0.3)	2.4 (1.0)	3.2 (0.8)	3.0 (1.4)	2
P scale	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.9 (0.4)	1

Legend: LI=Low Intelligence subscale of the SIMS, AF=Affective Disorder subscale of the SIMS, NI=Neurologic Impairments subscale of the SIMS, P=Psychosis subscale of the SIMS, and AM=Amnesic Disorder subscale of the SIMS, OR="overreporting", Non-OR="non-overreporting."

As shown in Table 3, the mildly injured motorists in the study by Puente-López et al. [12] scored, on the average at 9 points, i.e., below the SIMS cutoff for the total SIMS scores. The patients classified as "overreporting" also obtained a mean total SIMS score below the cutoff: their mean score was 12.9 points.

Both groups of the patients scored, on the average, lower than the persons instructed to feign post-MVA symptoms.

Noteworthy are the high mean scores on SIMS NI and LI scales. Persons scoring above 2 points on the LI scale or the NI scales are classified by the SIMS manual as malingering subnormal intelligence or neurologic impairment, respectively [6]. Thus, the same as the legitimate patients in the study by Capilla Ramírez, the mean LI scores of patients of Puente-López, both in the non-overreporting and in the overreporting group falsely classify the majority of these patients as feigning low intelligence and their NI scores falsely classify the majority of these patients as feigning "neurologic impairment."

From the neuropsychological perspective, high LI scores can be obtained when impaired concentration results in low performance on LI items that represent algebraic or logical reasoning tasks. Similarly, elevated NI scores are obtained by patients reporting legitimate neuropsychological whiplash symptoms such as the tinnitus, or dizziness, or paresthesia, numbness, or reduced muscular control over some of the limbs. An interested reader may consult the full text of the LI and NI scales, published in a critical review elsewhere [3], [4].

The mean AF score of the non-overreporting patients is close to the cutoff stipulated for this scale in the SIMS manual (cutoff at > 5 points). Given the mean of 4.2 with SD of 2.1 (see Table 3), it could be estimated statistically that about a third of these legitimate patients in the non-overreporting group might be branded by the SIMS as malingering "affective disorder." As explained earlier, the AF scale consists exclusively of items descriptive of symptoms of depression or those associated with depression [2], but these symptoms are all fallaciously scored by the SIMS [6] as indicative of malingering (see a few examples in Table 1).

The mean AF score of Puente-López's overreporting patients (see Table 3) classifies about two-thirds of persons in that group as "malingering affective disorder."

IV. DISCUSSION

A. Improper Generalizations from Mildly Injured Whiplash Patients

Both the patients in the study of Capilla Ramírez and in the one of Puente-López can be classified as only very mildly injured. The study by Capilla Ramírez used unusually restrictive inclusion criteria, those requiring normal physical examinations as well as normal X-ray, MRI, and EMG, excluding patients with physical injuries from their MVA: thus, only patients with very mild symptoms were accepted into the study [11]. Such a carefully preselected group would endorse only few of the medical symptoms listed in the SIMS. Thus, their total SIMS score was low and within the non-malingering range, see Table 2.

The study by Capilla Ramírez also appeared focused on cervical whiplash and thus, might have excluded patients with lumbosacral injuries, in addition to neck pain. In general, patients who have injuries to more than only the cervical area of the spine can be considered as more adversely affected [14].

Similar considerations also apply to the group of patients in the study by Puente-López. Only 4.5% of the non-overreporting patients and 8% of the overreporting patients of Puente-López experienced a lower back pain, in addition to their cervical whiplash. Furthermore, in the study by Puente-López et al. "dizziness" was reported only by 6 patients: all these were in the overreporting group. They described their dizziness only as mild.

In contrast, patients injured in high impact MVAs, i.e., more seriously injured patients, are known to experience dizziness more frequently: as many as 70 to 80% of them may report "dizziness" [17], [18].

The description of Puente-López's patients suggests that they experienced only very minor whiplash injuries in their MVAs: for that reason, their total SIMS score was low and within the non-malingering range, see Table 3.

It is a methodological error to generalize results from samples of such mildly injured patients to more severely injured post-MVA patients as the latter are likely to obtain much higher SIMS scores, given the indisputable fact that the SIMS is a list of legitimate medical symptoms [2]-[5], and devoid of items differentiating malingerers from moderately or severely injured MVA patients.

B. Suspect Data on the Amnesic Disorder (AM) Scale of the SIMS

Noteworthy are also the mean scores of Puente-López's patients on SIMS Amnesic Disorder (AM) scale: the non-overreporting group of his patients had the mean score of 0.0 (SD=0.0) and the same score and SD are reported for his overreporting group [12]. The full text of all 15 AM items has been reproduced elsewhere [3]. Some items of this AM scale list relatively very common memory or concentration problems such as those reported often enough even by normal persons, for instance, difficulties recalling which day

within the week or within the month it is (see Table 1). However, in the SIMS, each of these 2 items, if responded to with “True,” counts one point towards the diagnosis of “malingering amnesic disorder.”

The Item 18 (“*More than three times a day I find myself getting up to get something only to forget what it was.*”) of the AM scale also describes relatively common experience of some normal persons intensely focused on their most urgent daily tasks with the result of experiencing intermittent problems due to inadequate attention to some other routine chores.

For these reasons, even in the samples of normal persons, AM scores of 2 or 3 points do not cause a clinical concern. The cutoff of > 2 points stipulated by SIMS manual for the AM scale as the threshold for detection of “malingering memory problems” is psychologically unrealistic.

Memory and concentration problems) are among the most important symptoms of cerebral concussion, yet the patients of Puente-López obtained the mean AM score of zero (probably rounded) and their standard deviation is also listed as zero [12].

In contrast, the mean AM scores of various samples of normal controls typically range from 0.5 to 1.2, with the average at about 0.8, see Table 4, reproduced from Cernovsky and Fattahi [19]. The average standard deviation of the AM scale for the sample combining all those in Table 4 was calculated as 1.3.

Some normal control samples listed in Table 4 are also from Spain, so it is unlikely that the difference between AM score of zero listed by Puente-López’s team and those of other authors ranging from 0.5 to 1.2 could be explained away by ethnic differences.

Noteworthy is that even the mean AM score of Puente-López’s control sample (mean = 0.45, SD=0.17) is far above the zeros he reported for his patients. The mean AM score of his normal sample is close to those reported here for other normal control samples in Table 4.

TABLE 4: MEAN AM DATA AND SDs OF VARIOUS NORMAL CONTROL SAMPLES

Control Samples	N	AM
Smith & Burger [1]	34	1.2 (1.5)
Widows & Smith [6]		
Rogers et al. [20]	16	0.7 (0.9)
Santamaría Fernández [21] page 192-194	174	0.7 (1.1)
Santamaría Fernández [21] page 223-226	30	0.7 (1.2)
Giger et al. [22]	20	0.8 (0.8)
Clegg et al. [23]	30	0.5 (0.8)
Edens et al. [24], group 1	65	0.9 (1.4)
Edens et al. [24], group 2	59	1.1 (1.5)
Edens et al. [24], group 3	72	0.8 (1.6)
Statistically combined means and SDs of the above normal control samples [9], [19]	500	0.8 (1.3)

It is not clear why the patients’ AM data of Puente-López are reported as zero with an SD of zero. If this was a clerical error, then it is noteworthy that the same clerical error occurred both for his non-overreporting group of whiplash patients and the overreporting group. Briefly, it is unlikely that all (or almost all) of the 195 of his non-overreporting whiplash patients and of his 54 overreporting whiplash patients reported no memory problems on items of the AM scale, even not the most trivial ones such as a difficulty recalling which day of the week or within the month it is. Even if the whiplash injuries of these patients were perhaps

very unusually mild, higher AM scores could be expected, or at the least scores similar to normal samples.

A recently published Canadian study of patients injured in high impact MVAs obtained a mean AM score of 5.0 (SD=4.4) [9] consistently with the clinical lore that intense whiplash causes the post-concussion syndrome, i.e., also memory problems due to injury to brain tissues.

The zeros in the mean AM data of Puente-López’s patients would (absurdly) indicate, if there was no clerical error, that whiplash improves memory to levels *better than* those observed in normal uninjured persons. Briefly, the AM data of Puente-López do not make sense.

The mean AM score (mean = 0.5, SD=1.1) of patients in the study by Capilla Ramírez [11] also suggests that her patients had only mild post-MVA injuries and thus, were relatively free of post-concussive memory problems: the AM data of Capilla Ramírez are much lower than those of Canadian patients injured in high impact MVAs (mean AM score = 5.0, SD=4.4) [9].

C. Factors Determining the Size of SIMS Scores of Medical Patients

As already mentioned, more than 50% of SIMS items assess neuropsychological symptoms of the whiplash and of post-concussion syndrome, those common in injured motorists [17]. In MVA patients, the scores are higher in more severely than in mildly injured patients [9]. In general, this trend among injured motorists can be expected not only for SIMS total scores but also for all SIMS scales, except for the Psychosis scale which lists symptoms such as hallucinations and delusions. The exception may be patients with very severe post-MVA concentration problems who might unintentionally mark their responses incorrectly when reading the Psychosis items of the SIMS. Some other exceptions may include those related to Psychosis Item 28 (“*I believe that the government has installed cameras in stop lights to spy on me*”) and Item 62 (“*In my visions, I often see parts of bodies covered with blood*”). Obviously, traffic cameras have indeed been installed at some intersections in North-America to enforce traffic rules. And some post-MVA patients with PTSD may indeed have intrusive visions of human bodies covered in blood as a result of MVAs.

In this context, it is worth mentioning that the SIMS is still used in forensic settings to rule out the possibility that an inmate suffers from psychiatric illness. In an absurd manner, the person who legitimately endorses delusional symptoms or hallucinations listed in SIMS Psychosis scale is then classified by SIMS P scale as “malingering a psychosis” [5]. The full text and a detailed content analysis of all 15 items of the SIMS Psychosis scale has been published elsewhere [5].

A truly psychotic jail inmate might also endorse Item 62 about visions of bodies covered with blood (especially if the patient had, in fact, participated in knife fights or shootouts). Jailed patients who suffer from undiagnosed thought disorder and other psychotic symptoms might score very high also on other SIMS scales due to an idiosyncratic and distorted interpretation of the items. For instance, the AM Item 40 (“*I cannot remember whether or not I have been married*”) and AM Item 61 (“*I have difficulty remembering my birth date*”) may be endorsed as “True” by some delusional or confused psychotic patients.

Interpretation of the patient's responses on the SIMS should consider clinical implications of the patient's particular experiential background. For example, affirmative responses of war exposed veterans to Item 62 (*"In my visions, I often see parts of bodies covered with blood"*) falsely assign (in the SIMS scoring system) a point towards the diagnosis of malingering to war veterans who have similar intrusive memories as a part of their PTSD.

It must be noted that the cutoff score of SIMS Psychosis scale is only > 1 point [6]. Persons scoring two points or above are classified as malingering a psychosis. It is not rare for the SIMS data from normal samples, including even healthy college students, to misclassify more than 40% of the normals as "feigning psychosis" even though presumably none of these persons has any motivation or intent to malingering a psychosis [19]. For volunteers in such normal control samples, there are no nefarious consequences of such misclassifications, unlike the consequences to jailed, legitimately psychotic, but undiagnosed socially vulnerable persons who subsequently receive no treatment and may be mistreated and victimized by fellow inmates.

D. Factors Determining the Size of SIMS Scores of Instructed Malingerers

Normal persons recruited to feign medical symptoms on the SIMS, i.e., so called *instructed malingerers*, may differ widely in the number and type of the feigned symptoms. An imaginative study by Thomas Merten's team [25] statistically compared SIMS scores of two groups of instructed malingerers, those asked to feign symptoms of cervical whiplash.

One group included persons warned to be cautious to avoid detection and the second group consisted of those unwarned. The warned group obtained significantly lower SIMS scores (20.1, SD=8.7) than the unwarned group (31.6, SD=11.3).

This suggests the possibility that some groups of malingerers might report more symptoms on the SIMS than do injured whiplash patients. It is scientifically inappropriate to interpret such data as "supportive" of the criterion validity of the SIMS in its role as a test of malingering. The unwarned and careless malingerers obtain high SIMS scores only because they endorse many symptoms, however, so do many seriously injured patients or also legitimate but confused medical patients.

In summary, from the methodological perspective, the studies by the team of Puente-López [12] and by the team of Capilla Ramírez [11] are not adequate to evaluate "diagnostic accuracy of the SIMS." Above all, the SIMS is usually used on patients with more than very mild MVA injuries. More severely symptomatic MVA patients are almost routinely misclassified as "malingerers" by the SIMS: as already mentioned, some recent statistics show that 78.3% of moderately or severely injured MVA patients are misclassified by the SIMS as malingerers.

Since the studies by Puente-López and by Capilla Ramírez were carried out on patients with only very mild post-MVA injuries, it is not a surprising that their average SIMS total score fell below the SIMS cutoff of the 14 points, unlike what can be expected of SIMS scores of more extensively symptomatic MVA patients.

A recent meta-analysis of SIMS data [9] compared scores of malingerers to data of healthy normal controls, and to data of patients with mild injuries from car accidents, and also to patients injured in high impact car accidents. The results showed that SIMS scores of malingerers were usually not significantly different from those of legitimate patients injured in high impact car accidents: both groups reported similar numbers of symptoms listed in the SIMS and had significantly higher scores than normal controls. Patients with mild injuries had SIMS scores at an intermediate level, i.e., between those of normal controls and those of malingerers or also those of more severely injured patients [9].

As explained elsewhere, even cautious statements by SIMS psychologists such as *"this patient may be exaggerating, magnifying, or over-reporting his symptoms"* make the patient suspect to car insurance clerks, and thus result in denials or undue delays of therapies and of other legally owed benefits [26].

V. CONCLUSIONS

As the SIMS items represent only legitimate medical symptoms, no items with capacity to differentiate legitimate patients from malingerers, and as more than 50% of SIMS items are those typically encountered in seriously injured motorists, it logically follows that patients with more post-MVA symptoms are likely to obtain higher SIMS scores than patients with only very mild post-MVA injuries. Groups of very mildly injured post-MVA patients such as in the study by Puente-López or Capilla Ramírez might obtain total SIMS scores below the SIMS cutoff of 14 points and their mean total SIMS scores might be significantly lower than those of instructed malingerers. The study by Puente-López and the one by Capilla Ramírez failed to evaluate "diagnostic accuracy of the SIMS" because the SIMS is primarily used on patients with certainly more than very mild MVA injuries. The conclusions of their two SIMS studies cannot be generalized to SIMS scores of more seriously injured motorists. Severely symptomatic MVA patients are most likely to be falsely misclassified as "malingerers" by the SIMS. From a scientific perspective, the diagnostic use of the SIMS is inappropriate. Such diagnostic misclassifications by the SIMS cause iatrogenic harm.

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