Chapter 29
Detection of Malingering in Personal Injury and Damage Ascertainment

Giuseppe Sartori, Graziella Orrù, and Andrea Zangrossi

Abstract One of the most important challenges encountered by forensic and medicolegal professionals is the evaluation of simulating and dissimulating behaviors exhibited by litigants. The main feature of malingering is represented by the intentional production of false or exaggerated symptoms, motivated by external incentives. Assessment of malingering is often inadequate when exclusively based on the clinical interview, sometimes also grounded solely on the clinician's negative opinion. For this reason, the misclassification rate in the detection of malingerers can be considered alarmingly high (over 80 %). Malingering is not an all-or-nothing phenomenon, but it can be realized on several levels. Moreover, an examinee may attempt to malinger in a number of different ways, including fabricating or exaggerating psychiatric symptoms or presenting various types of cognitive deficits. Thus, several strategies have been identified for malingering detection (e.g., discrepancy method, symptoms analysis, and symptom validity testing).

Moreover, some of these strategies may be applied for the interpretation of a number of tests that have been developed for the identification of malingering.

Therefore, multiple sources of independent data (e.g., clinical data, test scores, etc.) should be considered and compared in order to accurately confirm or disconfirm cases of malingering. This chapter presents a non-exhaustive review of strategies and tests used for the detection of malingering of both psychopathological and cognitive symptoms/diseases.

29.1 Malingering in Litigation

One of the most important challenges encountered by forensic scientists and medicolegal professionals is the evaluation of simulating and dissimulating behaviors exhibited by litigants.

G. Sartori (✉) • G. Orrù • A. Zangrossi
Department of Psychology, University of Padova, Via Venezia 8, 35131 Padova, Italy
e-mail: giuseppe.sartori@unipd.it; graziella.orru@unipd.it; andrea.zangrossi@gmail.com

In 1866, Erichsen published results concerning patients (workers for the Prussian railroad) who developed persistent complaints after sustaining mild head trauma. Some years later, with regard to this concept, Rigler (1879) coined the term "compensation neurosis" in order to describe the origin of these injuries (or as the causative effect of these injuries). He strongly believed that the boost of long-term disabilities was due to a policy for compensating injured workers, introduced by the Prussian railroad. Another important contribution was made by Charcot, at a later stage. He supported the idea that the long-term symptoms resulting from "mild head injury" were ascribable to "hysteria and neurasthenia." By 1934, the diagnostic entities mentioned above ("compensation neurosis" and "hysteria") have contributed to the current diagnosis of "post-concussion syndrome" [1].

Recent approaches to malingering have been systematized in the DSM-5 [2]. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) classifies malingering with a V-code (V65.2), thus indicating that it is not a mental disorder but rather one of the "additional conditions that may be a focus of clinical attention" (Ref. 3, p. 739).

According to the DSM-5 (pp. 726–727) "[t]he essential feature of malingering is the intentional production of false or grossly exaggerated physical or psychological symptoms, motivated by external incentives." These incentives may be referred to gaining an advantage (e.g., economic/financial compensations) or avoiding a loss (e.g., imprisonment). In the clinical practice, malingering should always be suspected if at least one of the following circumstances is observed: (1) medicolegal context of presentation, (2) marked discrepancy between the individual's claimed stress or disability and the objective findings and observations, (3) lack of cooperation during the diagnostic assessment and poor adherence to prescribed therapies, and (4) the presence of antisocial personality disorder.

Despite the number of available strategies, the assessment of malingering in the forensic context presents a number of difficulties: problems in truthfulness evaluation or in estimating malingering base-rate in different contexts and the influence of variables related to the clinical interaction that can affect the forensic psychological assessment. For these reasons, assessments often show inadequate conclusions derived from subjective impressions, sometimes also grounded solely on the clinician's negative opinion of the examinee [3]. According to Rogers and Vitacco (2002), using the DSM-IV as criteria for the detection of malingerers, the misclassification rate can be considered as over 80 % [4].

The expansion of clinical evaluations into the legal arena, coupled with the fact that symptom report and effort on testing are under the direct control of the examinee, has led to an explosion in research on malingering in the past 10 years. For example, in 1980 only a few papers per year were published on malingering, whereas in 2009, there were more than 90 publications on this topic. In the 20 years between 1989 and 2009, over 1200 papers (ISI Web of Science) and volumes (e.g., [5]) on malingering were published. This growing number of publications has led to the development of several standardized tools that can be used in clinical and forensic practice for detecting malingering of both psychopathological and cognitive symptoms.

Plaintiffs may attempt to malinger in a number of different ways, including fabricating or exaggerating psychiatric symptoms or presenting various types of cognitive deficits. Thus, malingering is not an all-or-nothing phenomenon, but it can be realized on several levels. An examinee who exaggerates genuine psychopathological symptoms could represent one such level [6].

The voluntary component is not always present when feigned symptoms are detected. Indeed, it allows the differentiation between malingering and the factitious disorder which, in contrast, requires the absence of reward. In this case the aim behind the patient's fabricated symptoms is the need to assume the role of the sick person (without any form of external incentive). With the same criterion (presence of will and conscious deliberation in symptom fabrication), malingering could also be differentiated from conversion disorder and somatic symptom-related mental disorders.

A reliable sign of feigning, such as the presence of an obvious loss of function during the examination, but not at home, strongly suggests:

(a) a diagnosis of **factitious disorder** if the aim of the individual is to assume the role of a sick subject;
(b) a diagnosis of **malingering** if the aim is related to the achievement of an incentive (i.e., money).

Despite the oddities in malingering criteria, researchers have tried to estimate the incidence of malingering in a medicolegal setting. The base-rate of malingering and symptom exaggeration has been estimated in a large sample of personal injury cases ($N = 33,531$) by Mittenberg, Patton, Canvock, and Condit (2002) [7]. Twenty-nine percent of personal injury cases have been estimated to involve malingering or exaggeration of symptoms.

Furthermore, using a variety of methodological approaches, studies reported a prevalence of about 40 % of malingering in forensic settings [7]. By contrast, in a survey of 221 forensic psychologists, the prevalence of malingering was estimated at 17.4 % [8]. Additionally, depending on diagnoses and referral circumstances, base-rates of malingering and exaggeration may vary.

Although malingering may be easy to define, its detection and diagnosis in clinical practice are not so simple. Moreover, the detection of malingered symptoms becomes more difficult when referred to psychopathological disease, as a great part of the psychological assessment is grounded mainly on the evaluation of what is verbally reported by the examinee. In fact, psychopathological evaluation depends upon an accurate symptom report by the examinee. In order to help examiners, some strategies have been studied, such as those introduced by Slick, Sherman, and Iverson (1999) concerning malingered neurocognitive dysfunction (MND) [9].

29.2 Strategies for Detecting Malingering of Psychiatric and Cognitive Symptoms

Several strategies have been identified to be adopted for detection of malingering, both in clinical and forensic settings. Here we present a non-exhaustive review of strategies used for the detection of malingering of both psychopathological and cognitive symptoms/diseases.

29.2.1 Qualitative Analysis of Symptom Characteristics

From a clinical point of view, some typical characteristics of malingering can be identified [6].

- Simulators become increasingly normal as time goes by, so it could be useful to protract interviews if malingering is suspected.
- Delusions and hallucinations can be artificially produced, but catatonic behavior or inappropriate affect is rarely simulated, as malingerers are more likely to call attention to their delusions.
- Disorganized speech, lack of associations, and flight of ideas (that characterize thought disorders) are really difficult to fake throughout the interview.
- Unclear, vague answers.
- Positive answers are given in order to confirm symptoms. Usually, malingerers display this kind of behavior because of their belief that endorsing a symptom will increase the appearance of psychopathology.
- Symptoms not related and/or consistent with any mental disorders. Malingerers have the tendency to report many symptoms, indiscriminately; particularly, this is due to the belief that by reporting a larger number of symptoms the disorder will be perceived as more serious and severe.

29.2.2 Discrepancy Method

The above listed criteria have to do with the evaluation of isolated psychiatric symptoms, while the discrepancy method discussed below consists in evaluating the syndromic associations of symptoms that in the malingerer does not correspond to known syndromic entities.

One of the first and most adopted strategies in medicine and in psychology is called *discrepancy method* and refers in general to the clinical evaluation of the difference between observed findings and typical findings expected in a claimed disease. According to Larrabee (1990), five forms of discrepancy can be distinguished, as reported below.

- *Internal consistency of neurobehavioral domains*: divergent performance on tests that should be highly correlated
- *Disease-deficit compatibility*: production of symptoms not considered as primary manifestations of a reported disorder
- *Inconsistency with severity of injury*: divergence between the magnitude of the disease and the impairment with related symptoms
- *Ecological validity discrepancy*: inconsistency between performances in tests investigating a certain domain and the observed behaviors from the same domain
- *Violations of performance curves*: if a range of items from relatively easy to very difficult is presented, honest responders should correctly answer the easy items and possibly make errors in answering more difficult items. Malingerers, however, may perform poorly on easy items (intentionally choosing the wrong answer) and paradoxically improve their performance as the items increase in difficulty [10].

Consider, for example, the assessment conducted by A. Coppola in the case of the "*Smemorato di Collegno*" [11]: Coppola administered the Collegno amnesic, a short memory test consisting of the recall of a list of random digits. The amnesic recalled a string of eight digits but failed to recall a list of three digits. This is equivalent to lifting 100 kg, but failing to lift 10 kg. It is extremely unlikely, Coppola, for a genuine amnesic to recall eight digits but fail to recall three digits.

29.2.3   Rare Symptoms and Unrelated Symptoms

Another important general method is focused on the qualitative and quantitative analysis of symptoms. For instance, the presence of *rare symptoms* could be analyzed, that is, if the examinee reports symptoms that are infrequently seen in a clinical population. The *indiscriminant symptom endorsement* is also considered: when given the opportunity, malingerers may report a wide variety of symptoms, trying to feign an unspecified psychopathology without having in mind specific symptoms of a particular diagnosis. *Obvious symptoms* are also an important source of information: symptoms that are considered clearly indicative of mental illness are more often endorsed than those less obviously associated with psychopathology. An examinee should be suspected of malingering also if he/she shows *improbable symptoms* characterized by an extremely bad or fantastic quality or by an *extreme or unusual severity*. Indeed, malingerers are often not able to estimate how severe the symptoms should be in order to be credible nor how many of them there should be. Sometimes, an examinee can also interpret a stereotypical role related to *erroneous stereotypes*, thus reporting mixed symptoms of different diseases (e.g., describing a schizophrenic condition as "having two personalities" [6]). Moreover, sometimes an examinee reports *symptoms not congruent with his/her behavior*.

Some psychometric tests such as SIMS [12] are the standardization of the rare symptom approach described above.

29.2.4 Neuropsychological Tests in the Detection of Malingering

A third kind of method for detecting malingering is focused on the use of specific types of testing techniques. The *symptom validity testing* (*SVT*), for example, applies to two alternative, forced-choice testing. This strategy is simple and efficient. A patient with a genuine impairment (not able to choose the correct answer between the two stimuli) over many trials should give a performance at chance level. On the contrary, malingerers usually select the wrong response deliberately and thus perform significantly below chance. The most likely explanation for this performance is that the examinee knows the correct answer but decides not to choose it. This strategy can be considered similar to the abovementioned analysis of the performance curve.

The *floor effect strategy* is another method for detecting malingering. It is based on the assumption that even severe brain trauma patients are able to answer simple questions about themselves (i.e., "How old are you?") or make easy comparisons (i.e., "Which is more expensive, diamond or platinum?"). Starting from the assumption that even severely impaired subjects are successful in answering them, a failure on these simple questions is an important indicator of malingering.

In order to distinguish cognitive malingerers from genuine organic patients, empirical research highlights how Rey's 15-Item Test is an effective tool that utilizes the *floor effect*. Rey's 15-Item Test is a visual memory task and is presented to a potential malingerer as a difficult task (by stressing the number of items to be recalled). In the study [13], the items to be recollected were selected specifically, for the easy way that they can be grouped and/or remembered. Floor effect data should be used cautiously, since coaching can increase a malingerer's ability to foil this detection strategy.

Professionals almost always need to consider outside data in addition to the basic clinical interview in order to reliably detect and diagnose malingering. In fact, Rogers et al. (2002) warn against solely using the additional factors of "strongly suspected" malingering laid out by the DSM-IV-TR as a detection strategy, as doing so can result in a misclassification rate of over 80 % [4]. For instance, Resnick and Zuchowski (2007) note that in a criminal justice setting, an individual may begin the assessment with three out of four of the aforementioned factors simply because of the setting itself [14]. Therefore, it is imperative that one or more of the valid, structured measurement techniques designed specifically for malingering detection, as well as multiple sources of independent data, be used in order to more accurately confirm or disconfirm cases of malingering [15].

29.2.5   Tests for Detecting Malingering

Since the 1920s, there has been the need to design specific tools able to accurately detect malingering. The first malingering detection strategies were applied in 1926 in a notorious judicial and media affair concerning the alleged reappearance (in 1926) of a man who had gone missing in World War I. The Bruneri-Canella case, called in Italian the case of the "*smemorato di Collegno*," is probably the most famous case of malingered retrograde amnesia ever known in Italy. In brief, a man who appeared to have lost all his autobiographical memories and identity spent nearly a year in the Collegno asylum of Turin without a name. At first, the man was identified as Giulio Canella, the director of the "*Scuola Normale di Verona*" who disappeared during the war in 1916. Later, the man was identified as being Mario Bruneri, a petty crook from Turin who played the part of an amnesic whose retrograde memory gradually returned [11]. A long investigation was necessary, and, subsequent to an inquiry and several trials and appeals, the court found that he was indeed Bruneri. Despite the fact that several clinicians and academics evaluated the case, only Coppola diagnosed him with a "malingered retrograde amnesia," using a method that was extremely innovative for that period.

The question of his identity was thoroughly discussed worldwide, in newspapers and courtrooms. The debate endured for almost 40 years. Due to nationwide interest in the case, the term *smemorato di Collegno* became a common saying since the 1930s, meaning a person who forgets everything of his past life.

29.2.6   Tests for Detecting Malingered Psychiatric Symptoms

Several tests, for supporting psychiatric diagnosis, incorporate a quantitative approach in the identification of malingering and are described below.

– Minnesota Multiphasic Personality Inventory-2 (MMPI-2; [16]): this is the most widely used and researched multi-scale measure of psychopathology. In order to generate hypotheses of dissimulation, trained professionals can use the validity indicators, in particular the F scales (F, Fb, Fp). Furthermore, consistency scales (VRIN and TRIN) can be particularly useful to distinguish random responding and reading problems from other types of invalid profiles.
– Personality Assessment Inventory (PAI; [17]): this is a psychometrically sound multi-scale inventory very helpful in both clinical and forensic contexts.
– Negative Impression Management scale of the PAI (NIM; [17]): this is used to identify exaggeration of psychopathology and possible malingering.
– Structured Interview of Reported Symptoms (SIRS; [18]): this is a 172-item tool designed to assess a wide range of psychopathology and symptomatology. It consists of eight primary scales and five supplementary scales. Scores from the primary scales are classified into one of the four following categories: honest responding, indeterminate, probable feigning, and definite feigning.

– M-Test (M-Test; [19]): this test assesses the possibility of feigning or exaggeration of psychiatric symptoms. The M-Test was developed as a screening measure to specifically detect the malingering of schizophrenic symptoms.
– Structured Inventory of Malingered Symptomatology (SIMS; [12]): is a self-report measure designed to detect malingering of psychiatric symptoms and/or cognitive impairments. It consists of 75 dichotomous items (i.e., true-false) that focus on the following domains: low intelligence (LI), affective disorders (AF), neurological impairment (N), psychosis (P), and amnestic disorders (AM). Strategies used to detect deviant or malingered response patterns include endorsement of bizarre experiences and highly atypical symptoms.

29.2.7 Tests for Detecting Malingered Cognitive Symptoms

A variety of tests for detecting malingered cognitive symptoms are mainly focused on the detection of feigned memory impairment as this is one of the most frequent malingered cognitive symptoms. Here we present those most frequently used in clinical and forensic practice as they address symptoms which are frequently feigned.

– Test of Memory Malingering (TOMM; [20]): this is a recognition test composed of two trials of 50 items designed for adults to discriminate between true memory-impaired patients and malingerers. This tool is a particularly useful test to detect exaggerated or malingered memory impairment. A cutoff score of 45 on Trial 2 (i.e., 90 % correct responding) and Tombaugh's investigations [20] revealed a correct classification of 95 % of all non-demented patients as not malingering.
– Rey's 15-Item Visual Memory Test (MFIT; [21]): this test is used as a screening measure for malingered memory impairment. It consists of 15 items, arranged in three rows and five columns. The traditional scoring method involves simply counting the total number of items correctly recalled, with scores of less than nine items for raising the suspicion of malingering.
– Word Memory Test (WMT; [22]): this is a computer-administered memory task in which a 20-item word list is presented. Then, words appear in pairs: one word is presented, followed by the next, 1 s later. The pair disappears and another set is presented 2 s later. The list is presented twice, and then the subjects are asked to recall as many of the word pairs as possible.
– Dot Counting Test (DCT; [13]): this is another screening measure for malingering developed by Andre Rey. It consists of 12 cards on which are printed a series of dots. Respondents are presented with the cards in a fixed nonsequential order and are instructed to count the number of dots as quickly as possible. It is expected that the non-malingering patient will take longer to count the ungrouped dots than the grouped dots, with increases in counting time proportional to increases in the number of dots.

As mentioned above, in this context several neuropsychological tests have been applied, and in what follows we report some other helpful instruments.

– 48-Pictures Test
– Digit Memory Test (DMT)
– Portland Digit Recognition Test (PDRT)
– Computerized Assessment of Response Bias (CARB)
– 21-Item Test
– Coin-in-the-hand test
– The b Test

All the above tests are designed to investigate trait characteristics, while they are not able to be tailored to the specific symptomatology of a particular case. To overcome this problem, in recent years some techniques have been introduced, such as those described in the next paragraph.

29.3   New Techniques for Detecting Malingering

The techniques described above aim at detecting malingering behaviors of the respondent rather than a specific malingered datum. In some instances the plaintiff may overreport specific symptoms (e.g., shoulder pain, amnesia for the crime, etc.); in these cases, the above reported techniques may be of scarce utility. Recently, a number of procedures have been developed that may efficiently detect very specific malingered symptoms. These techniques include aIAT and TARA.

The aIAT [23] is a novel variant of the Implicit Association Test [24] that can be used to establish whether an autobiographical memory trace is encoded within the respondent's mind. More specifically, with the aIAT, it is possible to evaluate which one of two autobiographical events is true [23]. Nevertheless, aIAT has been tested in different domains and on different constructs such as future-, medium-, and long-term intentions, white lies and underlying intentions, mock crime, holidays, cocaine/heroine consumption, driving license, flashbulb memories (see [25] for a review), and whiplash malingering [26]. Thus, the aIAT has been applied in both forensic and clinical settings. It has been demonstrated that this tool can determine which of two autobiographical events is true with 91 % accuracy [23]. Despite the different kinds of investigations and constructs on which aIAT has been applied [25], the structure of the method is always maintained.

The aIAT includes stimuli belonging to four categories: two of them are logical categories represented by sentences that are certainly true (e.g., "I am in front of a computer") or certainly false (e.g., "I am climbing a mountain") for the respondent and relate to the moment of testing. The other two categories are represented by alternative versions of the construct under investigation (e.g., "I went to Paris for Christmas" vs. "I went to London for Christmas"), only one of the two being true. The aIAT is structured in five classification blocks: three simple categorization blocks (1, 2, 4), and two combined categorization blocks (3 and 5). In simple

blocks, each response button is used to classify sentences related to only one category. In double blocks, each response button is used to classify sentences related to two different categories. In Block 1, participants have to classify true and false sentences (e.g., I am in front of a computer vs. I am in front of a television) using two response keys, one on the left and one on the right of the keyboard. In Block 2, participants have to classify autobiographical sentences (e.g., I went to Paris for Christmas vs. I went to New York for Christmas) with the same two response keys. In Block 3 (double categorization block), true sentences and sentences related to the first autobiographical event (e.g., Christmas in Paris) are paired on the same response key, and false sentences and sentences related to the second autobiographical event (e.g., Christmas in New York) are classified with the other response key. In Block 4, only autobiographical events are reverse classified with the two response keys. Finally, in Block 5, participants have to classify both true sentences and sentences related to the second autobiographical event (Christmas in New York) with the same response key and false sentences and the first autobiographical event (Christmas in Paris) with the other key.

The basic principle of aIAT (and original IAT) is that the pairing of a truly autobiographical event with certainly true sentences should facilitate faster responses, so that the specific pattern of RTs for the double categorization blocks indicates which autobiographical event is either true or false. The true autobiographical event is identified because it determines faster RTs in the block in which it shares the same motor response with true sentences. Validation studies of the aIAT have been carried out on over 500 subjects, on an array of conditions, and the validity of the technique has been confirmed in a number of different labs, on different languages (see [25] for a review).

Evidence-based investigations of aIAT to efficiently detect faked whiplash symptoms or faked depression. Single case studies have been carried out to assess phantom limb pain and psychogenic amnesia.

In terms of layout and logic, another technique has much in common with the IAT/aIAT, as it is a timed, multi-block classification task: the Timed Antagonistic Response Alethiometer (TARA; [27]). This technique refers to a computer-based classification task in which honest respondents are able to complete a series of compatible classifications, but in which dishonest respondents are obliged to complete a series of incompatible ones. Doing the latter is harder than doing the former. Consequently, dishonest respondents must go more slowly than honest respondents to achieve equivalent levels of accuracy. Thus, longer average RTs suggest dishonesty and shorter ones honesty.

The TARA, like the IAT, is also a timed, multi-block classification task in which two types of statement are presented: target and control. Target statements express true and false propositions about respondents themselves. Control statements express true and false propositions about an irrelevant topic. In Block 1 control statements (false/true) are presented. The subject has to respond honestly. As in aIAT, the TARA discriminates the true statement from the false statement by detecting long reaction times to false statements (as compared to true statements). Block 2 would be identical to Block 1 except that the stimuli would be made of

target statements. Block 3 would combine Blocks 1 and 2. Thus, respondents would press the left key for false target and control statements and the right key for true ones. Block 4 would be identical to Block 2 except that responding would now be dishonest. Thus, respondents would press the right key for false target statements and the left key for true target statements. Finally, Block 5 would combine Blocks 1 and 4. Responding would be honest for control statements but dishonest for target statements. Thus, respondents would press the left key for false control or true target statements and the right key for true control or false target statements. In consequence, respondents would have to go slower when lying (Block 5) than when telling the truth (Block 3), to achieve equivalent levels of accuracy. The difference in their average RT between these blocks could therefore be used as a basis of distinguishing lying from truth telling [27].

Note that the principle proposed to underlie the TARA, unlike that proposed to underlie many traditional lie detectors, is simple, general, and uncontroversial: holding the error rate constant, incompatible tasks take longer to complete than compatible ones.

29.4   Conclusions and Future Directions

The recognition of probable malingering or symptom exaggeration in individual cases requires several inferential methods. The diagnosis typically involves consideration of the medical record, the patient's self-report, the observed behavior, and the results of a comprehensive neuropsychological examination [9].

The evaluation of malingering and other types of deception is a cornerstone issue in forensic practice and litigation evaluations especially when psychiatric and cognitive symptoms are under investigation. There is increasing interest in the application of reliable methods for the detection of deception to aid accurate diagnosis and prognosis in the legal arena. The key advantage of the new technique (aIAT) over traditional techniques is that it permits accurate and reliable inferences to be made at the level of the individual. While there are significant theoretical and practical challenges related to this approach, the results of the studies published so far are encouraging and may provide the first steps toward the development of a computer-based diagnostics in forensic psychiatry.

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